The Commodore C-128/C-64 Home Computing Guide

U.S.A. $2.95
CANADA $3.95

# RUN

WIN BIG!
In RUN's Giveaway Sweepstakes
CONTEST DETAILS INSIDE

*September 1986 A CWC/I Publication*

## RUN'S EXTENDED BASIC
Add More Power to Your C-64

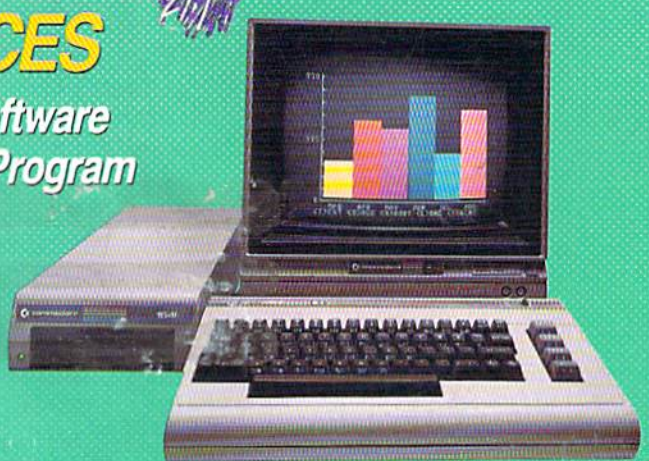
## 64 NOTEPAD
A Simple Desktop Accessory

## TIPS FROM A PRO
On Taking Screen Shots

## TURTLE GRAPHICS TUTOR FOR CHILDREN

Plus:
CES NEW PRODUCT ROUNDUP

## *ORGANIZE YOUR HOME FINANCES*
*—Guide to Available Software*
*—Easy-to-Use Type-In Program*

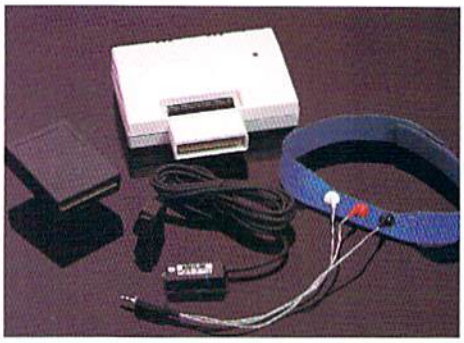


0 74470 12069 09

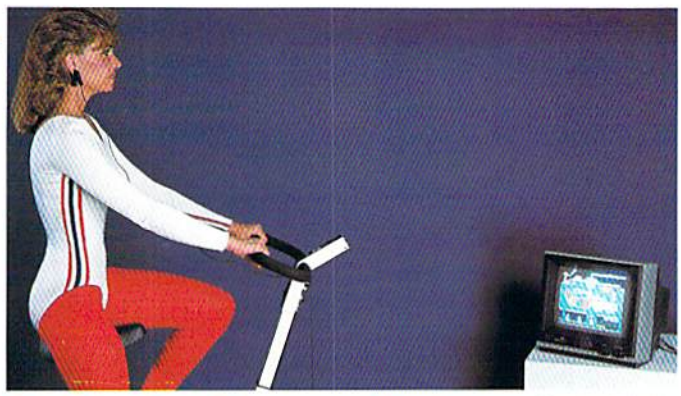
Circle 16 on Reader Service card.

# BODYLINK™

## CONVERTS YOUR COMMODORE 64/128 INTO A HEALTH AND FITNESS SYSTEM.



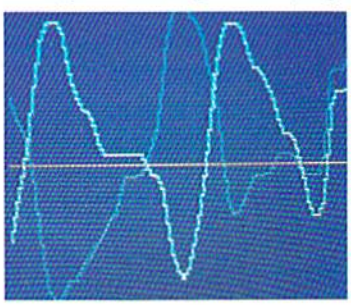
### Sports Training- A More Competitive You.



Bicycle not included

No matter what the sport, we have become a nation conscious of performing to win. We spend hours training, practicing, competing. Bodylink gives you the individual attention of the best pro—anytime you desire for as long as you wish—and at no extra cost. The Bodylink System provides instantaneous feedback on the exact manner in which your muscles are performing, enabling you to correct your swing or refine your pitch while still in motion. Bodylink allows a true two-way conversation between you and your body, giving you the winning edge.

**MUSCLE COORDINATION PACKAGE—$139.95**
This package includes Bodylink, Standard EMG Sensor and Lead Set, Head-Band, three electrodes and two software cartridges containing several programs.



### Reducing Stress. A Healthier and More Productive You

Medical authorities now consider stress a major health risk which may result in migraines, ulcers, back pain and heart attacks. With Bodylink you have within reach a powerful stress reduction system. Bodylink allows you to focus on physical signs of stress such as muscle tension and skin temperature. By using this feedback, Bodylink quickly and effectively teaches you to reduce stress for a healthier and happier life.

**STRESS REDUCTION PACKAGE—$209.95**
This package includes Bodylink, Biofeedback EMG Sensor and Lead Set, Head-Band, three Electrodes, Biofeedback Temperature Sensor, and two software cartridges containing several programs.

### Getting in Shape...Easier... Safer...More Effectively

Home exercise now becomes exciting and more effective. With Bodylink you can be sure you are exercising for maximum benefit. While using the aerobic exercise package, Bodylink monitors your heart rate and helps you determine the ideal level you need for aerobic gain. With the isometric muscle exerciser and training package, Bodylink guides you to do muscle developing exercises correctly and effectively. Bodylink motivates you to work harder if you are not reaching your target level, or helps you slow down if you are working too hard.

**AEROBIC EXERCISE PACKAGE—$199.95**
This package includes Bodylink, Standard EMG Sensor and Lead Set, Leg-Band, Pulse Rate Sensor, and two software cartridges containing several programs.

**ISOMETRIC MUSCLE EXERCISE & TRAINING PACKAGE—$139.95**
This package includes Bodylink, COMET, and two software cartridges containing several programs.

**BODYLINK is a peripheral that plugs into the cartridge slot of the Commodore 64/128 computer. *Knowledge of computers or computer programming is NOT necessary to use BODYLINK.* You don't even need a disk drive to save your data. Various sensors are used to record internal signals from your body and relay them to BODYLINK. You simply place the sensor against the part of your body to be monitored and watch the result on your TV screen.**

Commodore is a registered trademark of Commodore Electronics Limited.

DEALERS, PROGRAMMERS AND USER GROUPS INQUIRIES WELCOME

With the BODYLINK "COMET"™ (COmputerized Muscle Exerciser and Trainer) attachment, you can build and tone the muscle groups of your stomach, chest, back, legs, and arms. COMET is a electronic muscle builder that is connected to BODY-LINK and sends a message to your TV screen when it's compressed or pulled.

## Introductory Offer
## Order Now and Save 20%

**Offer expires September 30, 1986**

| DESCRIPTION | UNIT PRICE | QUANTITY | TOTAL PRICE |
|---|---|---|---|
| Muscle Coordination Package | $139.95 | | |
| Isometric Muscle Exercise & Training Package | $139.95 | | |
| Aerobic Exercise Package | $199.95 | | |
| Stress Reduction Package | $209.95 | | |

MAIL ORDER TO:

**BODYLOG, INC.**
34 MAPLE AVENUE
ARMONK, N.Y. 10504

**SATISFACTION GUARANTEED!**
**If you are not completely satisfied, you may return the products within 15 days for a full refund.**

Total Merchandise
Deduct 20% if postmarked before end of month.
N.Y. Residents please add applicable sales tax.
Subtotal
Shipping (Below $200 Add 5% of Subtotal (Over $200 Add 2.5% of Subtotal) OVERSEAS OR APO ADD 5% EXTRA
**TOTAL AMOUNT DUE**

To purchase additional sensors and software separately

## Call for More Information and our product catalogue

**914-273-6480 or 1-800-233-2911.**

Make checks payable to Bodylog, Inc.
Charge to my ( ) VISA ( ) DISCOVER or ( ) MASTERCARD

Name _____

Address _____

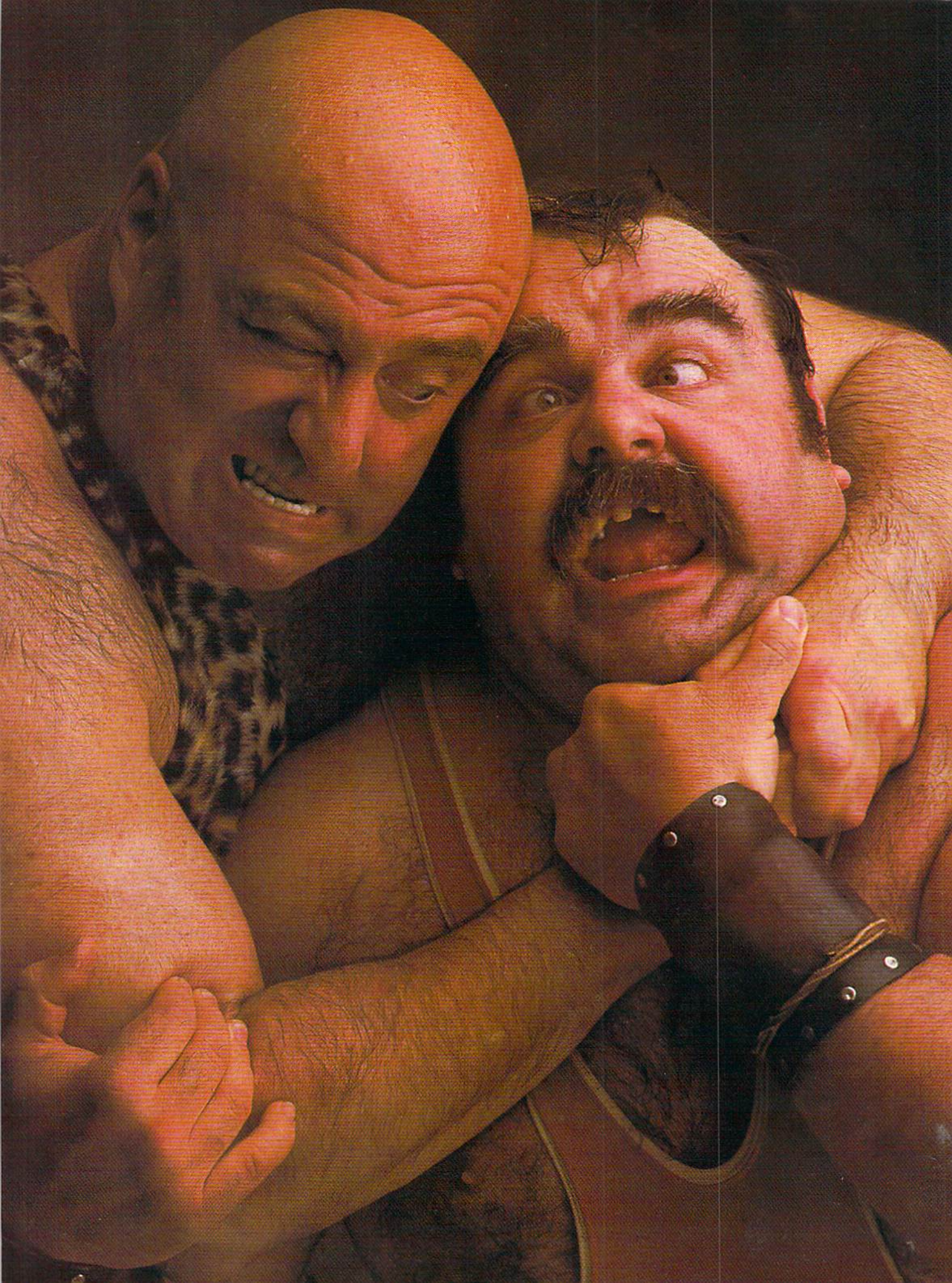
City _____ State _____ Zip _____

Signature _____

**Payment must accompany order.** Expires _____

All prices and specifications are subject to change without

RUN 8-1-86



Circle 10 on Reader Service card.

# There seems to be some disagreement as to which one of our Commodore® programs is the most fun.

Sometimes it's tough to make everybody happy all of the time. But that's not your problem.

Mindscape makes so many great Commodore® software titles you'll surely find at least one you have to get your hands on. Maybe two. Even three.

The choice is up to you. No holds barred.

Slam. Bam. With plenty of pow. *Bop 'n Wrestle™* puts you in the ring with a crazy collection of bone crushers. For one or two players, this first truly 3-dimensional combat sports simulation lets you climb, gouge, and claw your way to the top of the heap. Drop kicks, full nelsons, and the turnbuckle fly have never been this much fun before.

Be prepared to take evasive action. In *Infiltrator™* by Chris Gray, you're Captain Johnny "Jimbo Baby" McGibbits, ace chopper jockey. Your mission is no day at the races. When you make it through hostile enemy airspace, this realistic flight simulation converts to covert ground-based animated graphic adventure. Now just destroy the mad leader and his angry troops. Thumbs up!

Get ready to work some magic. *Spell of Destruction™* makes you a wizard's apprentice inside the Castle of Illusions. You must find and destroy the Prime Elemental. You're armed with a supply of spells and fireballs, but there are plenty of lessons to learn before you pass the Loremaster's challenging trial. Music and 3-dimensional graphics of 70 eerie locations make this adventure truly awesome.

Hoist a sail on your monitor. And sit down at the keys. *The American Challenge: A Sailing Simulation™* will make you a better sailor in a few short strokes. Race against the program, another skipper head-to-head, or via modem from coast-to-coast. When you've mastered the basics you're ready to meet the Aussies and reclaim The America's Cup. Set your sails and your sights on the waters of Silicon Bay.

Without question, this quest is for you. *Fairlight™* combines magic, adventure, strategy, and action as you meet the challenge to find the Book of Light. You're in a far away and ancient land. But 3-dimensional high-resolution graphics make it all seem real. This epic will grab you. Only the strong and resourceful will conjure up the courage it takes to survive.

**Mindscape**

Software that challenges the mind.

MINDSCAPE INC

Visit your retailer or call 1-800-443-7982 (in Illinois 1-800-654-3767) for VISA or MasterCard orders. To purchase by mail, send VISA or MasterCard number with expiration date, check or money order to Mindscape, P.O. Box 1167, Northbrook, IL 60065. Add $3.00 for shipping and handling. Allow 3-5 weeks for delivery. All of the above C64/128 products are $29.95 each.

If you're an attorney read this: Commodore is a registered trademark of Commodore Electronics Ltd. Copyright © 1986 Mindscape, Inc. Mindscape is a trademark of Mindscape, Inc. *Spell of Destruction* copyright © 1985 Softek International, Ltd. *Infiltrator* software copyright © 1986 Chris Gray Enterprises, Inc. Licensed in conjunction with International Computer Group. *Bop 'n Wrestle* copyright © 1986 Beam Software. All rights reserved. Licensed in conjunction with International Computer Group. *The American Challenge: A Sailing Simulation* is a trademark of Mindscape, Inc. *Fairlight* copyright © 1985/1986 *Bo Jangeborg and the Edge*. Licensed in conjunction with International Computer Group.

September 1986 RUN Vol. 3, No. 9

# FEATURES


## 28 Computerize Your Finances
Choose a commercial or public domain money-management program to keep your finances under control.
*By Joseph J. Shaughnessy*

## 34 The Loan Arranger
This financial program will produce an amortization schedule for any loan you have or are contemplating.
*By Jaap Kroes*

## 40 Focus on Screen Shots
Take high-quality photographs of your screen displays with ordinary equipment and this author's professional advice.
*By Ervin Bobo*

Page 40


## 46 Turtle-Tutor for Tykes★
Even prereaders can write turtle-graphics programs with Elmer's help.
*By Peter Crosby*

## 50 RUN Basic★
Now you can add turtle graphics, structured programming and more to *RUN*'s extended Basic 4.5.
*By Robert Rockefeller*

## 72 Programmers, Take Note!★
Make programming notes and check them through a window—even while your program is running!
*By Bob Kodadek*

## 76 Sign Maker★
This program lets you make and print out signs quickly and easily.
*By Ken Amberg*

## 78 The FSD-1 Disk Drive—A Viable Alternative
There's a new Commodore-compatible disk drive on the market that you'll want to consider.
*By Bill Ruddick*


★ This program is available on the September/October ReRUN disk. See page 80 for details.

*Cover Photography by Hyam Siegel*

*RUN* (ISSN 0741-4285) is an independent journal not connected with Commodore Business Machines, Inc. *RUN* is published monthly by CW Communications/Peterborough, Inc., 80 Pine St., Peterborough, NH 03458. U.S. subscription rates $19.97, one year; $29.97, two years; $41.97, three years. Canada and Mexico $22.97, one year, U.S. funds drawn on U.S. bank. Foreign $39.97, one year, U.S. funds drawn on U.S. bank. Foreign air mail subscriptions—please inquire. Second class postage paid at Peterborough, NH, and at additional mailing offices. (Canadian second class mail registration number 9565.) Phone: 603-924-9471. Entire contents copyright 1986 by CW Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. Programs published in this magazine are for the personal use of the reader; they may not be copied or distributed. **Postmaster**: send address changes to *RUN*, Subscription Services, PO Box 954, Farmingdale, NY 11737. (Send Canadian changes of address to *RUN*, PO Box 1051, Fort Erie, Ontario, Canada L2A 5N8.) Nationally distributed by International Circulation Distributors. *RUN* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *RUN* assumes no responsibility for damages due to errors or omissions.

MPA

Page 46

# DEPARTMENTS


*8* **RUNning Ruminations**
Upcoming special projects.

*10* **A Message From the Publisher**

*12* **Magic**
The original column of hints and tips for performing computing wizardry.

*16* **Software Gallery**
Fight Night
The Body in Focus
MicroLeague Baseball/ General Manager's Disk
Quizam!
Shadowfire
Bank Street Mailer

*66* **Second Annual RUNaway Contest**
Here's your chance to be a winner in *RUN*'s giveaway sweepstakes, with over $25,000 in prizes. And, just for entering, you'll receive a free QuantumLink terminal program!

*82* **Basically Speaking**
An exploration of Basic programming fundamentals.
*By Thomas H. Simmonds, Jr. and Jim Borden*

*87* **Program Enhancement**
A print routine to add to Joe Kaczynski's Songfest (April 1986).

*87* **Q-Link Happenings**
Announcing the latest services on QuantumLink.

*87* **Programming Briefs**

*88* **Telecomputing Workshop**
Advice and answers to your questions on modems, terminal programs, on-line networks, bulletin boards and more.
*By David Bradley*

*92* **The Resource Center**
New educational software and the offer of free educational programs on-line and on disk.
*By Margaret Morabito*

*102* **Commodore Clinic**
Got a problem or question related to Commodore computing? This monthly column provides the answers.
*By Jim Strasma*

*106* **Mail RUN**

*108* **New Products RUNdown**

*109* **RUN Amok**
We run corrected.

*110* **How To Type In Listings**

*112* **List of Advertisers**

*112* **Coming Attractions**

# If you own a C-64, you

## The one you purchased. And the

**GEOS** realizes the technical potential that has been in the C-64 all along. Speed. Power. Ease of use. Sophistication. Elegant, practical applications you might expect of a high-end personal computer, all made possible with GEOS. It's so simple—but then, so was fire. Once it caught on.

To begin at the beginning. **GEOS** stands for **GRAPHIC ENVIRONMENT OPERATING SYSTEM.** Why?

**GRAPHIC:** Because menus and icons replace long, typed command lines. Point and click, that's it.

**ENVIRONMENT:** Because GEOS provides a consistent, powerful way to use your computer. Learning new applications is a snap (or should we say click).

**OPERATING SYSTEM:** Because GEOS orchestrates every function so that they all work together systematically, even symphonically.

**Some basics.** Icons are graphic images which represent files or utilities. Each is different, and all are easy to recognize and easy to use.

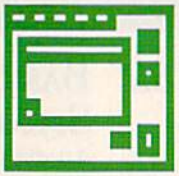
A menu is just that: a list of functions available for selection. When a menu appears, move the pointer to any item you wish. Click. Click. You're on your way.

A pointer is used to select and activate items. To move the pointer, roll the mouse or trackball or rotate the joystick. Once on target, click once to select; click a second time to activate.

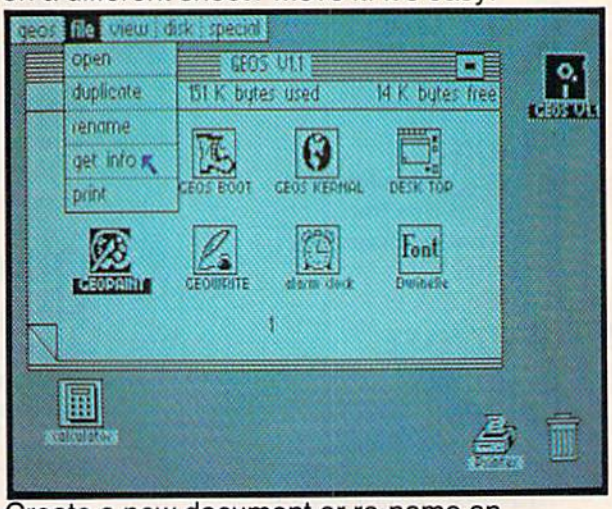
Fonts are a new way of looking at text. Choose from 5 different fonts (with more on the way). Try Dwinelle, or Roma, **bold,** or *italics,* even underline and outline. Need to fit more words on a line? Pick a smaller point size, like University 6 point, and get over one hundred characters per line.

All this and fast too. Because the integrated diskTurbo software improves 1541 disk drive performance 5 to 7 times. That's right. On both reads and writes.

GEOS can be divided into 4 areas: two functional aspects (deskTop and Desk Accessories), and two major applications (geoPaint and geoWrite).



**deskTop.** deskTop is a graphic interface, making file organization and management easy. As always, you call the shots. Load a disk. Files appear as icons on the disk notepad; to flip through, point at the folded corner and click. Prefer a file appear on a different sheet? Move it. It's easy.



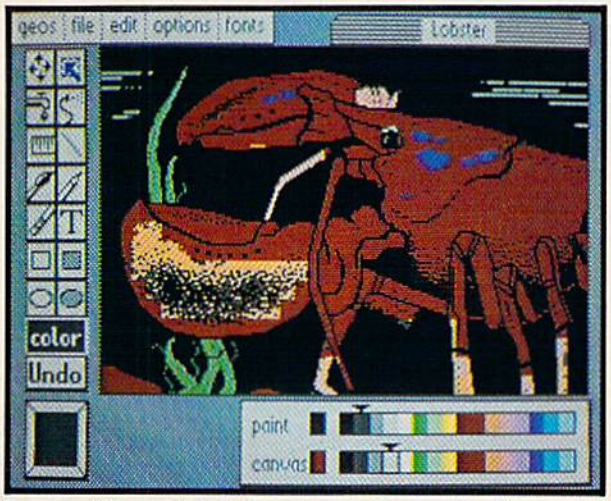

Create a new document or re-name an existing one. Want to copy a file onto the same or a different disk? Fine. Forgotten what a file contains? Select "get info" from the file menu. A description of that file's contents appears. Finished with a file? Print it. Save it. Or drop it in the trash and have done with it. Your call.

**geoPaint.** A full-featured, color graphics workshop at your fingertips. The pointer operates any one of the fourteen graphic tools and shapes in the drawing menu. Create masterpieces on the Drawing Window. By turns, use a pencil, an airbrush or a paint brush, each with a character all its own. Draw straight lines, squares, rectangles or circles. Fill in with any of the 32 patterns. Switch to pixel-mode, where each dot in a selected section is magnified many times its size for easy manipulation.

Circle 134 on Reader Service card.

# own two Machines.

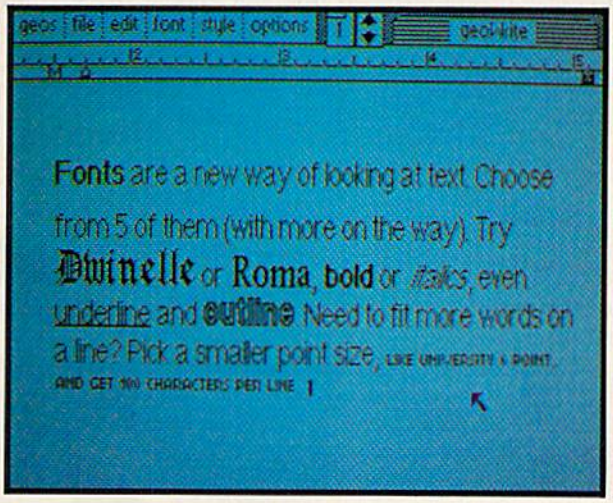
## personal computer GEOS™ unlocks.




Second thoughts? Erase what you don't want. Or "UNDO" your last act. (If only life could imitate art!)

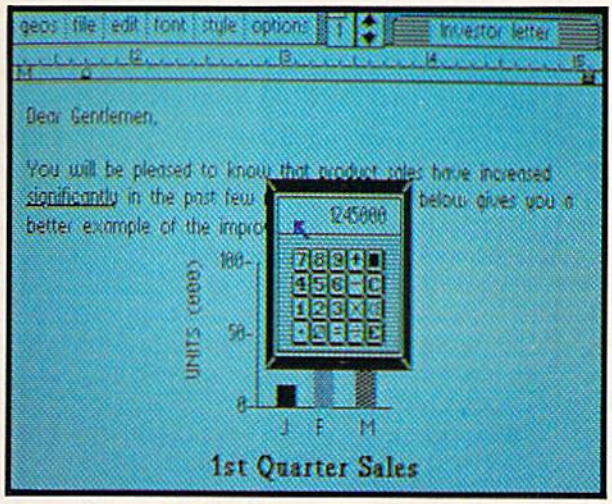
Add text if you like, in different fonts, styles or point sizes. Even change its position or layout at will.

Move or copy any part of your creation. Once done, you can include your artwork in another document—a letter home perhaps. (Won't Mother be pleased?) GEOS makes it easy.


geos file edit font style options
geoWrite
Fonts are a new way of looking at text. Choose from 5 of them (with more on the way). Try Dwinelle or Roma, bold or Italics, even underline and outline. Need to fit more words on a line? Pick a smaller point size, LIKE UNIVERSITY 9 POINT.
AND GET 100 CHARACTERS PER LINE !

**geoWrite.** An easy to use, "what you see is what you get" word processor. Create documents. Insert, copy, move or delete text as you wish. Choose from 5 different fonts in many different styles and point sizes. Preview your page exactly as it will appear off the printer. Typists will appreciate tabs, word-wrap and page breaks.

Documents may contain up to 64 pages. What's more, you can move to any page instantly. If you like, you can cut selected text from one section and move or copy it to another. Add graphics from geoPaint. It's a cinch.




**Desk Accessories.** Handy programs you can use while in any GEOS application. These include an alarm clock, a notepad for reminders, a four-function calculator, and photo and text albums which store pictures and phrases you may then paste into applications. The Preference Manager even lets you establish parameters for everything from mouse speed to the date and time—even background color. Civilized options, every one.

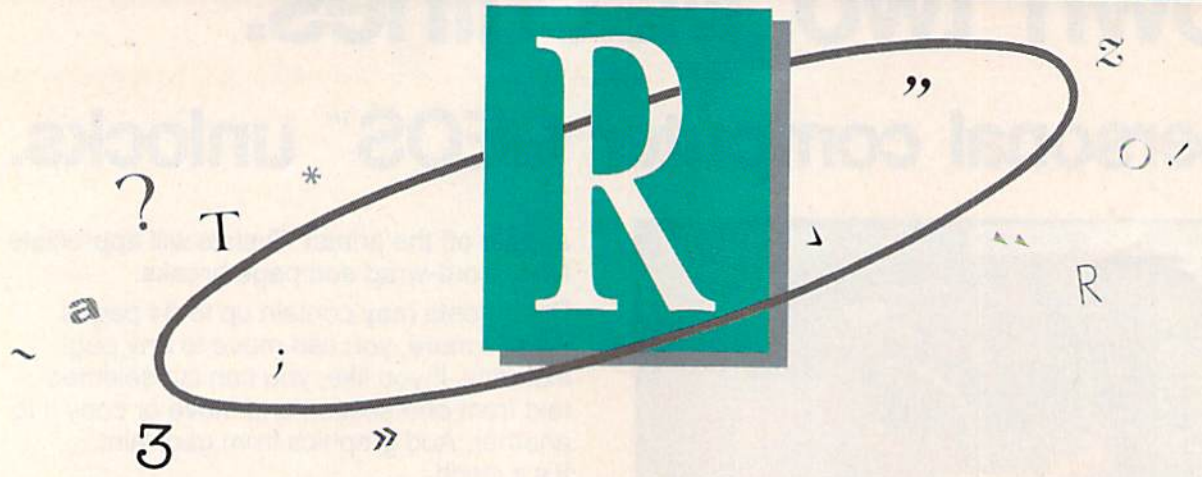
BERKELEY Softworks

## GEOS, A Whole New World for the C-64.

$59.95 TO ORDER: 800-443-0100 x234

GEOS Diskette includes deskTop, diskTurbo, geoPaint, geoWrite and desk Accessories $59.95.
CA residents add 6.5% tax. ($4.50 US/7.50 Foreign shipping and handling.)
US Funds only. B.S.W Order Processing, PO Box 57135, Hayward, CA 94545

Commodore 64 and C-64 are trademarks of Commodore Electronics, Ltd. GEOS, deskTop, geoPaint, geoWrite, diskTurbo and Berkeley Softworks are trademarks of Berkeley Softworks.



## *RUN*'s Third Annual Special Issue

Each year *RUN* readers anxiously anticipate the arrival of the *RUN* Special Issue, and, quite frankly, it wouldn't take too much prodding for us to continue this publishing tradition. Reader enthusiasm is matched only by the editors' enthusiasm and pride in soliciting and preparing the best material for this project. It's an exciting time, and this excitement is reflected in the quality of the product.

Reader feedback regarding *RUN*'s two previous special issues has been very positive and also extremely valuable in helping us fine-tune the editorial content of these issues. Reader input indicates that the type of useful information in the special issues has a wide appeal.

This year, we've kept the most popular features of previous issues and added new features that are sure to satisfy the needs and interests of C-64 and C-128 users. The demand for the kind of information that the special issue contains is strong among Commodore users. And this year's special issue promises to be the best yet. To assure this, we have recruited some of the best talent in the Commodore industry to contribute to this issue.

The lineup includes:

—The best of Commodore Clinic. A collection of approximately 200 answers to the most-often-asked questions regarding Commodore computing. Compiled by industry expert and author, Jim Strasma.

—The best of Magic. Page after page of computing hints and tips. This extensive section (about 250 tricks) will include the best of the past year, as well as never-before-published tricks developed especially for this issue. For your easy reference, these tricks are indexed and organized by topic.

—In addition, we have asked some of the biggest names in the industry to provide their favorite computing tips for our readers to use and call their own.

—Free Wall Chart. As a special service to our readers, this pull-out wall chart will feature hard-to-find programming information, including Basic 2.0 and Basic 7.0 memory maps, machine and assembly language information and system commands and functions.

—For application users. New this year will be a collection of the most useful utilities and applications programs. These brief, one-page program listings will be easy for anyone to type in, save and add to his or her software library. C-64 and C-128 programs will include powerful utilities, as well as useful applications for home use.

—*RUN* index. For readers who are looking for more information about a particular topic, the special issue will also include a handy index of programs and articles published in *RUN* during 1986.

This year's special issue offers readers information that is not available anywhere else in such a concise, easy-to-use package. Whether you're a new or experienced owner, a programmer or applications user, you'll find plenty of useful information here—well-organized and attractively packaged in an issue that readers will refer to throughout the year.

Although the copies of this year's special issue will not hit the newsstands until the end of this year, it is not too early to think about placing your order. In previous years, the *RUN* special issues have sold quickly, so get your order in early through the ad that will appear in next month's issue.

Please be sure to let us know how you enjoyed it, and how it compares to previous issues. As always, we welcome your comments, suggestions or criticisms.

## Productivity Pak II

While on the topic of special products from *RUN*, I'd like to mention another project that the editors are working on. It's the Productivity Pak II, a compilation of some of the most productive applications for the Commodore computerist.

Productivity Pak II, available at the beginning of October, will feature word processing, database management, spreadsheet calculation, telecommunications, utilities, applications and more. The disk will contain new and improved versions of *RUN*'s most popular programs: RUN Script, RUN Term Plus and the Datafile series. In addition, the 64 disk will include graphics and handy utility programs.

C-128 owners looking for productive programs will also find them in this special disk: RUN Script 128, a powerful 80-column word processor; Reminder 128, a handy desktop accessory; Gradebook Manager; Music Construction Set; and Menu 128.

For more information on ordering your copy, see the convenient order form in next month's issue.

**db**

Circle 80 on Reader Service card.


"21 SECOND BACKUP"™ (VERSION 4-1)

The SOLUTION TO DISK DUPLICATION FOR COMMODORE-64




FAST — Duplicates diskettes in 21-seconds*.
SIMPLE — One keystroke provides complete backup.
RELIABLE — Error free reproduction from originals.

DUPLICATION PROCESS INCLUDES:
★ Automatic formatting and disk analysis.
★ ★ Duplication of errors, track and sector ID's, gaps, checksums, sync bytes, address marks, clock bits, and densities.
★ Track to track synchronization.
★ Half track and abnormal track duplication.

ADDITIONAL FEATURES
- Easy to follow menu driven software.
- Snap on hardware installation.
- Program designed for use with 1 or 2 1541 drives.
- Hardware is transparent when "21 second backup" is not in use.
- "Verify option" to ensure transfer of proper data.
- User provided with exact duplicate of original (will not break protections).
- "21 seconds backup" will strengthen parameter copiers.

*Heavily protected disks will take maximum 45-seconds

ANOTHER GREAT PRODUCT

SUPER FAST FILE BACKUP UTILITY

FEATURES INCLUDE:
★ Same hardware as "21 second backup"
★ Uses 1 or 2 1541 drives
★ Copy files; copies 36 blocks (9k) per-second
★ Modifies directories and adds seperators
★ Renames files, disk names, and ID's
★ ★ Swaps, deletes, and transfers files
★ ★ Disk analysis; verifies entire diskette
★ ★ Validates files with accuracy
★ Formats entire diskette in 10-seconds
★ Split screen directory viewing

PLUS 15 SECOND BACKUP

Duplicates entire non-protected diskettes in 15-seconds

| | |
|---|---|
| 21-second backup (with hardware) | $39.99 |
| Super fast file backup utility (with hardware) | $39.99 |
| 21-second backup + super fast file backup utility | $55.99 |
| 21-second backup (disk only) | $19.99 |
| Super fast file backup utility (disk only) | $19.99 |

Add $7.00 shipping, handling, and insurance
All prices in U.S. currency. Quebec residents add 9% sales tax.
Always same day shipping

ORDER TODAY
Send — money order to:
VG DATA SHACK
5625 Grande Allée Blvd, Loc (5), Brossard, Québec, Canada, J4Z 3G3
Phone — (514) 445-9663, (514) 445-9598, (514) 656-8952
WE ACCEPT
MasterCard VISA



**PUBLISHER**
Stephen Twombly

**EDITOR-IN-CHIEF**
Dennis Brisson
MANAGING EDITOR/PRODUCTION
Swain Pratt
REVIEW EDITOR
Beth Jala
COPY EDITOR
Peg LePage
NEW PRODUCTS EDITOR
Harold Bjornsen
TECHNICAL MANAGER
Margaret Morabito
TECHNICAL EDITOR
Timothy Walsh
ASSOCIATE EDITOR
Jim Strasma

**NATIONAL ADVERTISING SALES MANAGER**
Stephen Robbins
SALES REPRESENTATIVES
Kenneth Blakeman
Nancy Potter-Thompson
AD COORDINATOR
Heather Paquette
1-800-441-4403
MARKETING COORDINATOR
Wendie Haines
WEST COAST SALES
Giorgio Saluti, manager
1-415-328-3470
1-800-344-4636
(In California)
1060 Marsh Road
Menlo Park, CA 94025
CUSTOMER SERVICE MANAGER
Barbara Harris
SECRETARY
Sue Donohoe

**ART DIRECTOR**
Glenn Suokko
PRODUCTION/ADVERTISING SUPERVISOR
Howard Happ
EDITORIAL DESIGN
Anne Dillon
Karla M. Whitney

**PRESIDENT/CEO**
James S. Povec
**VICE-PRESIDENT/FINANCE**
Roger Murphy
**VICE-PRESIDENT OF PLANNING AND CIRCULATION**
William P. Howard
**BUSINESS MANAGER**
Matt Smith
**EXECUTIVE CREATIVE DIRECTOR**
Christine Destrempes

**CIRCULATION MANAGER**
Frank S. Smith
DIRECT MARKETING MANAGER
Bonnie Welsh
SINGLE COPY SALES MANAGER
Linda Ruth
TELEMARKETING MANAGER
Kathy Boghosian
AUDITS AND STATISTICS MANAGER
Susan Hanshaw
**SPECIAL PRODUCTS DIRECTOR**
Jeff DeTray
SPECIAL PRODUCTS MANAGER
Craig Pierce

**GRAPHIC SERVICES MANAGER**
Dennis Christensen
TYPESETTING SUPERVISOR
Linda P. Canale
TYPESETTER
Doreen Means

**MANUFACTURING MANAGER**
Susan Gross
**DIRECTOR OF CREDIT SALES & COLLECTIONS**
William M. Boyer

# A Message from The Publisher

In the past three issues of *RUN*, we have brought you feature stories highlighting or previewing the most recent product developments from Commodore for users of C-64 or C-128 computers. Now that you've had the chance to read the June, July and August issues, you have the perspective to see how these developments reflect Commodore's plans for both its installed base and new users.

It is apparent that Commodore's overall strategy in announcing these new developments is twofold: first, to provide first-time computer buyers with a complete computing solution, consisting of immediate applications, an easy-to-use operating environment and a simple entry to the world of telecommunications; second, to give experienced users additional hardware and software capabilities for their computers and a unique on-line service that opens up new possibilities.

The first strategy is achieved by bundling with the new 64C the GEOS operating system (with the GeoWrite and GeoPaint applications), the Q-Link terminal program and one educational application. The second strategy has been addressed through hardware-expansion products and telecommunication services that break new technological ground.

Many of you are now familiar with the collaborative effort between Commodore, QuantumLink and Lucasfilm, but you may wonder what brought these well-known companies together. The answer lies in the fact that QuantumLink is the only on-line service that supports the 64's and 128's locally generated graphics and sound.

Commodore learned that Lucasfilm had been working on the Habitat concept (see *RUN*'s August issue) for some time, but with no success in bringing the project to fruition. To do so, Lucasfilm needed both development funding for the project and an on-line service using locally generated graphics and sound. The combination of Commodore with the C-64/C-128 and QuantumLink provided the way for Habitat to become a reality.

Commodore users can expect more new services from QuantumLink in the future, and Commodore also has several additional hardware enhancements planned. According to company officials, the 1581 3.5-inch disk drive and the new mouse will be available later this fall.

With regard to GEOS, our most recent subscriber survey reveals that even before our June story on the new operating system, over a third of *RUN*'s subscribers had heard of it. However, when asked if they planned to purchase GEOS, over half of our readership was unsure. *RUN*'s feature story on GEOS in the June issue brought you up to date about the product and should help you make a good decision on purchasing it. Your decision may be influenced by the fact that many productivity software publishers have embraced GEOS, so we can expect new GEOS-based and GEOS-compatible products in due time.

So far, the general reaction to GEOS has been positive. For example, many user groups are excited about its desktop publishing potential, and, according to Berkeley Softworks, they can look forward to the appearance of expanded GEOS publishing capabilities later this year. Programmers, however, are thus far not happy with GEOS, because there is as yet no software to let them program this new operating system. This actually poses to programmers the unique challenge of developing a solution to the problem.

Berkeley Softworks will publish the programmer's reference manual in the fall, and by year-end will introduce GeoBasic, which will allow programmers easy access to the DOS text and graphics capabilities of GEOS. Indeed, there have been several suggestions for a CLI (command line interpreter) program, or "shell," to use over GEOS, instead of the current icon desktop.

We look forward to more of your feedback on these new developments.

**ST**

"Getting it up is only half the fun!"

# Spitfire 40

**The Best Thing Since the Real Thing**

More than just a flight simulator, it is a matter of life and death with you at the controls of one of the world's most versatile aircraft. The cockpit has working dials, gauges and compass. Taking off, landing and flying are based on the Mark I Supermarine Spitfire, right down to fuel pump problems actual pilots faced while diving!

With a choice of simulator and game scenarios, the game gives any number of players a chance to shoot down enemy aircraft. You can save your log to disk, so you can record the number of kills and flight hours you've flown. Succeeding flights become tougher as your Spitfire demands more flying and fighting skill, providing a never-ending challenge.

Comes with authentic Pilot's Notes, similar to those the RAF handed out to its pilots. You'll be flying one of the most memorable planes of World War II, with a little luck, a little skill, and by the seat of your pants. On disk for your **Commodore® 64/128** computer, joystick required. **$35**
Conversions to Apple, Atari & IBM forthcoming!

For Fast Credit Card Ordering
Call Toll Free **1-800-638-9292**

AH GAMES OF STRATEGY

microcomputer games DIVISION
**The Avalon Hill Game Company**
A MONARCH AVALON, INC. COMPANY
**4517 HARFORD ROAD • BALTIMORE, MD 21214**

# Hints and tips for Commodore users

*Magic is the* original *column of reader-submitted hints and tips. Each month we present brief, useful computer "tricks" to help you get the most out of your Commodore computing system—whether you're a beginning or advanced computerist, a C-64 or C-128 owner. Magic is a forum for* RUN*'s imaginative and inventive readers to share their programming tips, brief software or hardware modifications, shortcuts or items of general interest. If you have an idea to make computing easier, faster, more exciting and enjoyable, send it to:*

*Magic*
RUN *Magazine*
*80 Pine St.*
*Peterborough, NH 03458*

*If your trick is accepted for publication in the column, you will receive a colorful RUN Magic T-shirt.*

*"School is Open" is a chant often heard in September, and students wish they also had a chant to make their school system disappear. But alas, this month we have no tricks to exorcise the effects of the first chant, nor a trick to make teachers vanish.*

*However, we* do *have a few tricks to help make studying your school subjects a bit easier. First try the many tricks that are available in books on expanding* your *memory. Then try the magic trick in this month's column that expands the memory capacity of* RUN*'s popular datafile program on your C-128.*

*If you're lucky enough to have a copy of RUN Script 64 for typing term papers, you also have a way of copying machine language codes. And, when you've finished the homework assignments that take up so much of your time, use the tricks contained herein to save you time typing in programs and Data statements on your C-128.*

*Come to think of it, this month's tricks will help make your new school year a pleasant experience!*

**$322 Colossal Datafile on the C-128**—The C-128 greatly expands the memory capacity of Mike Konshak's Datafile program (*RUN*, November and December 1984). Since the unexpanded C-128 has over three times the available RAM of the C-64, your files can be much larger.

In line 23 of the original Datafile program, simply increase the value of variable M from 30,000 to 60,000. *Presto!* You've got a Datafile 128!

**James Adams**
**Indianapolis, IN**

**$323 A faster colossal Datafile**—After making the above change to Datafile, you can double the speed of RAM operations by adding the Fast command either to the first line of the Datafile program or as a new line at the beginning of the listing.

You must have an RGB cable connected between the C-128 and the video monitor to use this feature, since the Fast command deactivates the 40-column screen.

**James Adams**
**Indianapolis, IN**

**$324 Restructuring DFRestructure**—In Mike Konshak's DFRestructure program (*RUN*, November 1985), changing line 4784 to MEM = 60000: RL = 0 increases the number of entries you may enter into your files. Now load the old file and either rename the field or increase the length of the field by one character. When you resave the file, you'll have more space for entries.

**Clarence F. Cragin**
**Cottage Grove, MN**

**$325 C-128 and Plus/4 screen code decoder**—This short Basic program converts screen codes to their equivalent CHR$ codes and displays the value represented by each character.

```
10 REM C128 & PLUS/4 SCREEN CODES - MARTIN
   GELB
15 PRINT"{SHFT CLR}":CHAR,6,1,"{CTRL 9}SCRE
   EN CODE TO CHR$ CODE":PRINT
17 PRINTTAB(10)"{2 CRSR DNs}{CTRL 0}RUN/STO
   P TO STOP":PRINTTAB(10)"CONT <RETURN> TO
    CONTINUE"
20 FOR S = 1 TO 128
25 A=(S AND 127)OR(S AND 32)OR((S AND 64)*2
   )OR((64-SAND32)*2)
```

*Listing continued.*

```
30 PRINT:PRINT"{HOME}{7 CRSR DNs}SCREEN COD
   E";S;"{2 SPACEs}CHAR ";CHR$(A);" CHR$ CO
   DE";A
40 FORT=1TO500:NEXT:NEXT
50 PRINT"{SHFT CLR}{CTRL 9}THE END":LIST
```

Change line 20 to INPUT"SCREEN CODE"; S and line 40 to GOTO 20 to inspect individual screen codes.

**Martin Gelb**
**Deerfield Beach, FL**

**$326 Entering C-64 programs in C-128 mode**—When typing in Basic C-64 programs, use the C-128 mode in order to take advantage of Basic 7.0's editing features and the 1571's rapid disk access. When you're finished, save the program. It should load and run without trouble in C-64 mode.

**Richard W. Clark**
**Barrow, AK**

**$327 C-128 onions and Data statements**—Chopping onions and typing Data statements are jobs no one likes to perform. The best method for performing these tasks is to assign them to others, thus avoiding spilling your own tears. But, if you must do these jobs yourself, wear goggles before chopping the onions, and type in Data statements using the C-128's Auto feature and programmable function keys. When you're ready to enter the line number of the first Data statement, enter in Direct mode, KEY 1,"DATA":KEY 3,",":AUTO(line-number increment) and press the return key.

To best utilize the C-128's numeric keypad and the reprogrammed function keys, you must position your fingers properly on the keys. The index finger operates the 0, 1, 4, 7 and F1 (data) keys. The middle finger also may operate the 0 key, as well as the 2, 5, 8 and F3 (comma) keys. The ring finger operates the decimal, 3, 6 and 9 keys, and the little finger is used to press the enter, minus and plus keys.

**Eric Pickell**
**Palatine, IL**

**$328 Up, up and away C-64**—Whoever said piloting a hot-air balloon was easy? Windspeed, the rate of ascent and descent, the balloon's fuel consumption and the navigation of the contraption all add up to create a pilot's nightmare. This program opens with the balloon rising from the bottom of the screen. The balloon's buoyancy is controlled by alternately pressing and releasing any key until you alight on the landing pad at the opposite end of the screen.

Obstacles have been placed in the sky to keep your journey to the landing pad challenging. While keeping an eye on the fuel gauge at the top of the screen, navigate over the first obstacle, under the second and then land on the pad. Avoid hard landings and bypassing or colliding with anything on the screen.

Although it is unlikely you'll want to do so, the level of difficulty can be increased by changing the wind speed, fuel allotment and obstacle locations (L1 and L2) in the first line of the program.

```
10 PRINT"{SHFT CLR}UP, UP AND AWAY - THE SN
   ADERS":FUEL=250:WIND=20:L1=1395:L2=1724
20 X=40:Y=228:B=1:V=53248:POKE1612,68:POKE2
   040,13:POKEL1,42:POKEL2,42
30 FORT=0TO7:READQ,D:POKEV+Q,D:NEXT:FORT=83
   2TO895:READQ:POKET,Q:NEXT
40 IFPEEK(197)<>64THENA=-.03:FU=FU-1
50 B=B-A:Y=Y-B:POKEV+1,Y:X=X+WI/50:POKEV,X:
   A=.03
60 IFPEEK(V+31)=1ORY>229ORX>250ORFU<0THENPR
   INT" GAME OVER - TRY AGAIN!":END
70 IFX>239ANDX<243ANDY>141ANDY<145ANDB>-.5A
   NDB<.5THENPRINT"NICE LANDING!":END
80 PRINT"{HOME}{CRSR DN} FUEL{4 SPACEs}{4 C
   RSR LFs}";FU:PRINT" BUOYANCY{4 SPACEs}{4
    CRSR LFs}";INT(B*100):GOTO40
90 DATA 21,1,28,1,31,0,32,2,33,1,37,12,38,2
   ,39,7
91 DATA 002,170,128,042,170,168,170,170
92 DATA 170,234,234,234,234,234,234,187
93 DATA 187,187,187,187,187,110,174,173
94 DATA 110,174,173,074,170,161,018,170
95 DATA 132,018,170,132,004,170,016,004
96 DATA 170,016,001,040,064,001,040,064
97 DATA 000,065,000,000,065,000,000,085
98 DATA 000,000,085,000,000,085,000,000
```

**Bob Snader and David Snader**
**Baltimore, MD**

**$329 C-64 windows**—Have you ever dreamed of writing a Basic program with pull-down menus for your C-64? The following program creates a window for each pull-down menu needed. Variable C determines the color of the window, Y1 is the number of lines down from the top of the screen, X1 is the number of spaces from the left side of the screen, X determines the column width of lines within the window, and Y is the number of horizontal lines in the window. The cursor is placed at the upper-left corner of the screen after the program is run.

Try substituting new values for the above variables to create fast, professional-appearing pull-down menus on your C-64.

```
1 REM C64 WINDOWS - ARAN ANDERSON
10 C=1:Y1=3:X1=5:X=5:Y=1:GOTO5000
20 C=C+1:Y1=Y1+2:X1=X1+3:X=X+2:Y=Y+3:IFC=6T
   HEN 5050
5000 POKE646,C:PRINT"{SHFT CLR}";:IFY1=0THE
     N5010
5005 FORI=1TOY1:PRINT:NEXT
5010 PRINTTAB(X1);"{SHFT U}";:FORI=1TOX:PRI
     NT"{SHFT *}";:NEXT:PRINT"{SHFT I}"
5020 FORI=1TOY:PRINTTAB(X1);"{SHFT B}";:FOR
     J=1TOX:PRINT" ";:NEXT:PRINT"{SHFT B}":
     NEXT
5030 PRINTTAB(X1);"{SHFT J}";:FORI=1TOX:PRI
     NT"{SHFT *}";:NEXT:PRINT"{SHFT K}"
5040 PRINT"{HOME}";:GOTO20
5050 PRINTTAB(19)"{CTRL 2}{10 CRSR DNs}INSI
     DE THE ":PRINTTAB(21)"WINDOW{COMD 7}"
```

**Aran Anderson**
**Pocatello, ID**

*Continued on p. 96.*

# tcp COMMODORE

ORDERS ONLY
CALL TOLL FREE **1-800-468-9044**

**COMMODORE 128=**

ON SALE NOW!!!
1670 ... $134.95
MPS-1000 ...$247.95

C128
1571, 1572 DRIVES
1902 MONITOR
1350 MOUSE
1700, 1750 RAM EXPANSION

CALL NOW FOR LOWEST PRICES

**SAVE A BUNDLE ON A BUNDLE**
PACKAGE DEALS AVAILABLE
CALL FOR DETAILS

**NEW COMMODORE 64C**

Now bundled with GEOS and Quantrum Link!!
Still compatible with all C64 programs!!

CALL FOR OUR LOW PRICE!!

**NEW** 1541C DISK DRIVE!!
OUR PRICE....$CALL

## CMS

**General Acct System**
for the C128 in 128 mode
Includes ! ! General Ledger ! ! Accts Receivable ! ! Billing Statements ! ! Accts Payable ! ! Check Writing ! ! Job Costing ! ! Payroll

TOTAL PRICE **$134.95**

We are a Commodore Authorized Service Center

Out of warranty repair rates:
C-64 ..... $69.95
1541 ..... $79.95
C-128, 1571 ..... $CALL
1541, 1571 align ..... $29.95

prices include all parts and labor, 30 day warranty, and UPS return ground shipping

## COMMODORE 128 SOFTWARE

For 128 in 128 or CPM modes

**WORD PROCESSORS**

| | | | |
|---|---|---|---|
| JANE | $32.95 | PERFECT WRITER | $CALL |
| VIZAWRITE 128 | $CALL | PAPERBACK WRITER 128 | $CALL |
| WORDPRO 128 | $59.95 | FLEET SYSTEM II w/speller | $47.95 |
| PAPERCLIP | $37.95 | FLEET SYSTEM III w/speller and thesaurus | $CALL |
| PAPERCLIP w/spellpack | $49.95 | SUPERSCRIPT 128 | $59.95 |
| WORD WRITER 128 w/speller | $49.95 | | |

**SPREADSHEETS**

| | | | |
|---|---|---|---|
| EPYX MULTIPLAN | $44.95 | SWIFTCALC 128 w/sideways | $49.95 |
| PERFECT CALC | $CALL | PAPERBACK PLANNER 128 | $CALL |

**DATABASES**

| | | | |
|---|---|---|---|
| PROFILE 128 | $59.95 | PAPERBACK FILER 128 | $CALL |
| PERFECT FILER | $CALL | SUPERBASE 128 | $CALL |
| DATE MANAGER 128 | $CALL | | |

**MISC 128 SOFTWARE**

| | | | |
|---|---|---|---|
| VIZASTAR 128 | $CALL | DESK MANAGER 128 | $34.95 |
| MACH 128 | $39.95 | C POWER 128 from Proline | $59.95 |
| MATRIX from Prog. Periph | $47.95 | | |

## GAME GALLERY

Educational Software too!
**All Games stocked for quick ship!!!** Games work on 64 or 128 in 64 mode

**BEST SELLING GAMES**

| | |
|---|---|
| Leaderboard | $29.95 |
| Bard's Tale | $32.95 |
| Lord of Conquest | $24.95 |
| Night Mission Pinball | $call |
| Hitchhiker's guide | $22.95 |
| F-15 Strike Eagle | $21.95 |
| Karateka | $19.95 |
| Kung Fu (Spinnaker) | $call |
| Flight Simulator II | $32.95 |
| FS II Scenery disks | $15.95 |
| Jet | $29.95 |
| Microleague Baseball | $27.95 |
| Microleague general manager disk | $27.95 |
| Microleague 1985 teams | $15.95 |
| Hobbit | $call |
| Sargon III | $37.95 |
| Murder by the Dozen | $24.95 |

**ACCESS**

| | |
|---|---|
| Beach Head | $24.95 |
| Beach Head 2 | $29.95 |
| Leader Board Tourn. Disk | $16.95 |

**ACCOLADE**

| | |
|---|---|
| Dam Buster | $22.95 |
| Fight Night | $22.95 |
| Hard Ball | $22.95 |
| Law of the West | $22.95 |
| PSI 5 trading co | $22.95 |

**ACTIVISION**

| | |
|---|---|
| Alcazar | $19.95 |
| Borrowed Time | $19.95 |
| Computer Fireworks Celebration | $19.95 |
| Countdown to shutdown | $19.95 |
| Fast Tracks Slot Car Const | $19.95 |
| Garry Kitchen's Gamemaker | $24.95 |
| Ghostbusters | $24.95 |
| Great Amer RR | $24.95 |
| Hacker | $19.95 |
| Little Computer People | $24.95 |
| Master Of Lamps | $19.95 |
| Mindshadow | $19.95 |
| Pitfall II: Lost Caverns | $19.95 |
| Space Shuttle | $19.95 |

**AVALON HILL**

| | |
|---|---|
| Superbowl Sunday | $26.95 |
| Team Disk for SS | $16.95 |

**BRODERBUND**

| | |
|---|---|
| Championship Lode Runner | $24.95 |
| Lode Runner | $24.95 |
| Music Shop | $29.95 |

**BLUE CHIP**

| | |
|---|---|
| Baron | $24.95 |
| Millionaire | $24.95 |
| Tycoon | $24.95 |

**COMMODORE**

| | |
|---|---|
| Sky Travel | $27.95 |

**ELECTRONIC ARTS**

| | |
|---|---|
| Adventure Constr | $27.95 |
| Archon | $18.95 |
| Archon 2 | $27.95 |
| Boulder Dash | $18.95 |
| Carriers at War | $37.95 |
| Europe Ablaze | $37.95 |
| Hard Hat Mack | $13.95 |
| Heart of Africa | $24.95 |
| Mail Order Monsters | $24.95 |
| Movie Maker | $27.95 |
| Music Const. Set | $17.95 |
| Pinball Contr. set | $16.95 |
| Racing Destr | $24.95 |
| Reach for the Stars | $32.95 |
| Realm of Possib | $16.95 |
| Seven Cities of Gold | $24.95 |
| Sky Fox | $24.95 |
| Software Golden Oldies | $16.95 |
| Touchdown Football | $22.95 |
| Ultima IV | $45.95 |
| 1 on 1/Dr. J-Bird | $24.95 |

**DATA EAST**

| | |
|---|---|
| Karate Champ | $26.95 |
| Kung Fu master | $26.95 |

**EPYX**

| | |
|---|---|
| Summer Games | $26.95 |
| Summer Games II | $26.95 |
| Temple Trilogy | $29.95 |
| Winter Games | $27.95 |
| World's Greatest Baseball | $24.95 |
| World's Greatest Football | $28.95 |
| World Karate Cha | $22.95 |

CALL FOR PRICES ON OTHER EPYX PRODUCTS

**INFOCOM**

| | |
|---|---|
| Cut Throats | $22.95 |
| Deadline | $25.95 |
| Enchanter | $25.95 |
| Infidel | $29.95 |
| Planetfall | $25.95 |
| Sorcerer | $29.95 |
| Spellbreaker | $29.95 |
| Suspect | $29.95 |
| Wishbringer | $25.95 |
| Witness | $25.95 |
| Zork I | $22.95 |
| Zork II | $26.95 |
| Zork III | $26.95 |

**INVISICLUE BOOKS FOR ANY INFOCOM GAME .. $6.95**

**MINDSCAPE**

| | |
|---|---|
| Bank Street Music Writer | $27.95 |
| Bank Street Storybook | $27.95 |
| Castle Clobber | $18.95 |
| Halley Project | $27.95 |
| Indiana Jones | $22.95 |
| Quake minus one | $17.95 |
| Shadowfire | $17.95 |
| The Perfect Score: Prep for Sat | $49.95 |
| The Lords of Midnight | $17.95 |

CALL FOR PRICING ON OTHER MINDSCAPE PRODUCTS

**MICROPROSE**

| | |
|---|---|
| Acrojet | $24.95 |
| Crusade in Europe | $27.95 |
| Decision in the Desert | $27.95 |
| Gunship | $24.95 |
| Conflict in Vietnam | $call |
| Hellcat Ace | $21.95 |
| Kennedy Approach | $24.95 |
| NATO Commander | $24.95 |
| Silent Service | $24.95 |

WICO
Boss ..... $13.95
Bat Handle ..... $18.95
Three Way ..... $CALL

SPECTRAVIDEO
Quick Shot ..... $6.95

**JOY STICKS**

| | |
|---|---|
| Solo Flight | $24.95 |
| Spitfire Ace | $21.95 |
| Top Secret | $24.95 |

**RADARSOFT**

| | |
|---|---|
| Maps USA | $34.95 |
| Maps Europe | $34.95 |
| World Maps | $34.95 |

**RANDOM HOUSE**

| | |
|---|---|
| Garfield | $17.95 |
| Garfield Double Dares | $17.95 |
| Snoopy's reading machine | $17.95 |
| Snoopy's sky writer | $17.95 |
| Snoopy's writer | $17.95 |

**SIMON & SHUSTER**

| | |
|---|---|
| G.I. Paper Airplane const | $call |
| JK Lasser's Income Tax guide | $39.95 |
| Kermit's Story Maker | $19.95 |
| NY Times Crossword Puzzle Vol. 1 or 2 | $14.95 |
| Spy Hunter | $31.95 |
| Star Trek-Kobayashi alt | $29.95 |
| Typing Tutor III | $29.95 |

**SPECTRUM HOLOBYTE**

| | |
|---|---|
| Gato | $call |

**SPINNAKER**

| | |
|---|---|
| Adventure Creator | $22.95 |
| Alphabet Zoo | $16.95 |
| Cosmic Combat | $call |
| Delta Drawing | $19.95 |
| Facemaker | $19.95 |
| Hey Diddle Diddle | $16.95 |
| Homework Helper | $call |
| In search of the most amazing thing | $18.95 |
| Snooper Troops I or II | $18.95 |

**SPRINGBOARD**

| | |
|---|---|
| Early Games | $26.95 |
| Easy As | $29.95 |
| Piece of Cake Math | $26.95 |

CALL FOR PRICING ON ALL STRATEGIC SIMULATION GAMES

## C-64 BUSINESS AND PRODUCTIVITY

**C-64 WORD PROCESSORS**

| | |
|---|---|
| Paperback Writer | $call |
| Paperback Writer Dictionary | $19.95 |
| Bank Street Writer | $call |
| Bank Street Speller | $34.95 |
| Cut & Paste(EOA) | $17.95 |
| Font Master II | $34.95 |
| Wordpro 64 | $36.95 |
| Spellpro 64 | $32.95 |
| Wordpro 3 + /64 | $14.95 |
| Fleet System II | $call |
| Paperclip | $37.95 |
| Paperclip w/spellpack | $49.95 |
| Mirage Professional WP | $36.95 |
| Trio | $call |
| Word Writer 64 w/speller | $34.95 |
| Kid Pro Quo | $32.95 |

**C-64 DATABASES**

| | |
|---|---|
| Bank Street Filer | $34.95 |
| Consultant | $39.95 |
| Mirage Database w/Report gen | $36.95 |
| Profile 64 | $36.95 |
| Data Manager | $19.95 |

**C-64 SPREADSHEETS**

| | |
|---|---|
| Paperback Planner 64 | $call |
| Vizastar 64 | $79.95 |
| Pracitcal(d) or (t) | $call |
| Calkit | $39.95 |
| Hes Multiplan | $29.95 |
| PS. The Programmable Spreadsheet | $19.95 |
| Swiftcalc 64 w/sideways | $39.95 |
| Sideways | $19.95 |
| Calc Result Adv (d,c) | $67.00 |

**CARDCO**

| | |
|---|---|
| Freeze Frame | $39.95 |
| Numeric keypad | $34.95 |
| 5 slot cart. exp | $54.95 |
| S'more Basic | $49.95 |

**PROLINE**

| | |
|---|---|
| GT4 fast save, fast load cartridge | $22.95 |
| C Power, C compiler | $call |
| CADPIC | $36.95 |
| Cashbox | $36.95 |
| Wordpro 64 | $36.95 |
| Spellpro 64 | $32.95 |
| Profile 64 | $32.95 |
| PAL 64 | $32.95 |
| POWER 64 | $32.95 |

**TOOLBOX 64 ..... $49.95**

**UTILITIES**

| | |
|---|---|
| Merlin 64 | $34.95 |
| Fast Load | $24.95 |
| Vorpal fast loader | $call |
| Quest Stat manager | $34.95 |
| Pal 64 | $32.95 |
| Power 64 | $32.95 |
| Toolbox 64 | $59.95 |
| CSM 1541 align | $34.95 |
| Mach 5 | $24.95 |
| Mach 128 | $call |
| C Power | $69.95 |
| Simon's Basic | $39.95 |

**C-64 INTEGRATED PACKAGES**

| | |
|---|---|
| Vizastar 8K | $79.95 |
| Trio | $call |
| Homepack | $39.95 |

**MISCELLANEOUS**

| | |
|---|---|
| Estate power supply for C-64 | $54.95 |
| Koalapad | $59.95 |
| Koala Gibson Light pen | $49.95 |
| Naverone 3 Slot expander | $27.95 |

**GRAPHICS**

| | |
|---|---|
| Print Shop | $25.95 |
| Print Shop Companion | $24.95 |
| Graphics Library I, II, or III | $16.95 |
| Newsroom | $34.95 |
| Clip Art I | $19.95 |
| Clip Art II | $call |
| CADPIC | $32.95 |
| Screen Dumper 64 | $19.95 |

**Financial & Accounting**

| | |
|---|---|
| Softsync Pers. Acct. | $32.95 |
| Cont. Home Acct. | $46.95 |
| Timeworks General Ledger, A/R, A/P, Payroll, Inventory | $40.95 each |
| Cashbox | $36.95 |
| Timeworks Electr. Checkbook | $19.95 |
| Timeworks Money Manager | $19.95 |

**TUSSEY COMPUTER PRODUCTS** P.O. BOX 1006 STATE COLLEGE, PA 16804

# CLASSIFIEDS

*INFORMATION AND PA ORDERS 814-234-2236*

**OPEN 9-8 Mon-Fri; 10-5 Sat EAST COAST TIME**

## GEOS
C64 COLOR VERSION
**$49.95**

## PRINTERS

**Epson printers**
1 yr warranty
LX-80 ..... $229
Homewriter 10 .... $CALL
FX-85 ..... $359
FX-286 ..... $CALL
RX-100 ..... $299
DX-10 ..... $CALL

**PANASONIC**
2 YR WARRANTY
1091 ...$229.00
1080 ...$199.00
1092 ..... $CALL
1592 ..... $CALL
3131 Daisywheel ..... $CALL
3151 Daisywheel ..... $CALL

**JUKI**

PRINTER/TYPEWRITER
2200 ..... $264
Daisywheel Printer, Portable Typewriter, Built in Correction Tape

PRINTERS
6000P ..... $CALL
6100P ..... $344

NX-10
call for price and details
NL-10C ..... $CALL
SL-10C or
SG-10C ..... $226
Commodore ready
SG-15 ..... $364
SD-10 ..... $323
SD-15 ..... $449
POWERTYPE ... $229
18cps daisywheel
SR-10, SR-15 .. $CALL

**star** MICRONICS INC

**PRINTER PACKAGES**
all packages work with C64 or C128
star NX-10 & Xetec Supergraphix ... $289.95
NX-10 & Xetec Supergraphix jr.. $275.95
PANASONIC
1091 & Xetec Supergraphix ..... $289.95
1080 & Xetec Supergraphix jr. ..... $239.95
Packages Available! All printers/interfaces...call for details!

**SEIKOSHA**
2 YR WARRANTY
SP-1000VC ..... $179.00
SP-1000A or SP-1000I .. $199.00

**Printer Closeouts!**

**NEC 8027A**
105 CPS. Friction and tract feed. Works with Print Shop!
**$139**

COMREX
COMREX 220 ...$119.95
Commodore Ready ... 3 month Warranty from Epson

**PRINTER INTERFACES**
G-WIZ ..... $49.95
MW-350 w/4K Buffer $CALL
Cardco Super G... $CALL
Xetec Supergraphix $CALL
Xetec Jr. ..... $46.95
Grappler CD ..... $87.95
Tymac Connection $67.95

**Xetec** inc.
SUPER GRAPHIX interface w 8K buffer, down loadable fonts
$ lowest price
SUPERGRAPHIX jr printer interface.. $46.95
Font Master II ... $34.95

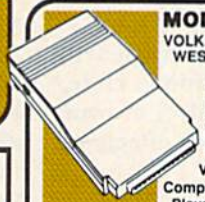
**UW Unison World**
Printmaster..... $29.95
Art Gallery..... $CALL

**RELEVANT SOFTWARE**
Icon Factory.....$29.95
Billboard Maker.....$29.95

**ENHANCER 2000** DISK DRIVE
**$159**
1 YEAR WARRANTY

**The Print Shop**
Broderbund Print Shop $25.95
Print Shop Companion $24.95
Graphics Library I, II or III ..... $16.95
120 sheet color paper refill ½ red, ½ blue, ½ gold .. $8.95

**SAT Preparation With HAYDEN**
Prepared by Professionals
SAT Score Improvement System ..... $59.95
Includes Preparation for Math. Reading comp. Vocabulary. Quantitative Comparisons, and Word problems
SAT Practice Test ..... $17.95



**MODEMS - MODEMS**
VOLKS 6480 300/1200 BAUD $124.95
WESTRIDGE 6420.....$59.95
6480 300/1200 BAUD...$139.95
MESSENGER.....$42.95
1670.....$157.95
1660.....$CALL
MITEY MO .....$59.95
VIP TERMINAL.....$34.95
VIDTEX TERMINAL..$23.95
Compuserve Starter Kit ..$19.95
Playnet Starter Kit .....$14.95
MASTER MODEM $39.95
Includes Dow Jones, Compuserve Time

## MONITORS

**COMPOSITE COLOR**
COMREX 6550 ..... $149.00
with sound & 2 yr warranty
SAKATA SC-100 ..... $149.00
THOMPSON 36632 ..... $139.00
TAXAN 220 ..... $169.00
14" Separated Video, mono mode

**MONOCHROME**
ZENITH 1220 12" flat amber ..... $94.00
ZENITH 1230 GREEN ..... $94.00
GOLDSTAR 12" medium res amber or green ..... $79.95
GOLDSTAR 12" high res.... PANASONIC 120 12" amber ..... $79.95
NEC1205 amber w/sound ..... $89.95
CARDCO 128/80 cable ..... $ 9.95
C128 to 80 composite monochrome adapter

**RGB/COMPOSITE**
MAGANAVOX 8562 ..... $287.00
2 yr warranty, monochrome mode
THOMPSON 36512VC ..... $274.95
monochrome mode, separated video
PANASONIC DT1300 ..... $259.95
Great price & Panasonic reliability

**DISKS**
per box of 10
BONUS DISKS
SS/DD ..... $7.45
DS/DD ..... $7.95
NASHUA DISKS
SS/DD ..... $8.95
DS/DD ..... $9.45
TUSSEY DISKS
SS/DD ..... $8.45
DS/DD ..... $8.95

**DATA 20 XL-80**
The XL-80 is an 80 column board that plugs into the back of your C-64. It's **compatible with the Mitey Mo** modem software to give you an 80 column terminal on your C-64. Included with the XL-80 is an 80 column word processor, spreadsheet, and mailing list program
XL-80
$59.95
XL-80 & MITEY MO Package Deal
$107.95

**CLOSEOUT SPECIAL!!**
Wordpro 3 + /64
**$14.95**
while supply lasts

**Software orders over $50.00 will be shipped FEDERAL EXPRESS (yes, even with *these* prices)**
You only pay TCP's standard shipping charge of $4.00 per order. This offer also valid on peripherals and accessories under 8 pounds. Orders arriving before 11:00 AM our time will be shipped out same day.*

FEDERAL EXPRESS

**Computerized order entry, processing and status allow TCP to serve you faster and better!**

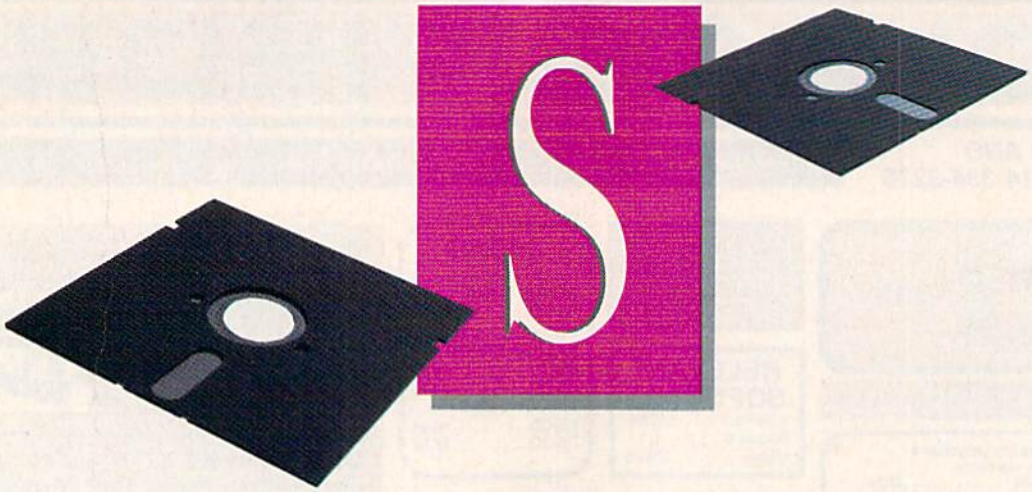
- If through some oversight we don't have the the lowest price, we would appreciate the opportunity to beat it. If we can, you will get the benefit of our Federal Express shipping on software orders over $100.00.
- We accept Mastercard, Visa, COD and mail orders.
- Purchase orders are accepted from qualified corporations and institutions. Minimum order of $500.00 required.
- No sales tax on orders outside of PA.
- Buy with confidence. We honor manufacturers warranty.

VISA MasterCard

**To order by mail:** We accept money order, certified check, personal check. Allow 2 weeks for personal check to clear.
**Shipping:** $4.00 for software and accessories $10.00 for printers and color monitors/$8.00 for disk drives and other monitors. Add $3.00 per box shipped COD. Call for other shipping charges. Additional shipping required on APO, FPO, AK, HI, and foreign orders.
**Terms: ALL PRICES REFLECT CASH DISCOUNT, ADD 1.9% FOR MASTERCARD OR VISA.** Manufacturer's warranty honored with copy of our invoice. **ALL SALES ARE FINAL.** Defective items replaced or repaired at our discretion. Pennsylvania residents add 6% sales tax. Prices and terms subject to change without notice.

*ORDERS ONLY...CALL TOLL FREE* **1-800-468-9044**

tcp



*Compiled by HAROLD R. BJORNSEN*

# Fight Night

B

*Create a Boxing Contender Who's a Knockout in the Ring*

Latest in a series that almost redefines the computer game, Fight Night, like other games from Accolade, combines strategy and arcade action, clothed in good graphics and enhanced by excellent sound effects.

Using a quick-boot system that really works, Fight Night presents you with a menu of five choices. For arcade-type action, go directly to Boxing. The computer will pick one of the lower-ranked boxers from its stable.

Above the ring, an inset shows profiles of both boxers (you're the clean-cut guy) as well as the round number, point scoring and the minutes and seconds remaining in the round.

All action is controlled by the joystick, and it may take several rounds for you to become adroit at faking or throwing jabs and body blows, raising or lowering your guard or moving right or left.

As you land blows, your score increases, and your opponent's "KO" bar goes up. Get it up to maximum and you've scored a knockout. On the other hand, blows landed by your opponent will. . . you guessed it.

Maybe you should have trained first, or, better yet, should have built yourself a powerful boxer capable of withstanding great punishment.

You do this in the Construction mode, building a contender from the head down, selecting from various body types, and then a set of legs ranging from spindly to huge. Then you must give your contender strengths (should his jab or body blow be the more powerful?) as well as weaknesses (giving him a high resistance to head blows means he is more vulnerable to body blows). You can't have everything, and you can't put a superman in the ring. In any event, the boxer you create may be saved to the master disk and, if necessary, be modified later on.

With your contender constructed, you can now go into training. Here, you practice joystick control at your own speed, observing the effects of your moves in the actions of your boxer against a punching bag. When you think you have it under control, go to the Spar mode.

Here you can call up any two boxers you've created. You and a friend can fight them, or you can let the computer control both boxers, giving you the chance to observe the good and bad points of your contender and modify him before he goes into the tournament.

In the tournament, you construct a series of fights for your contender, and it's probably best to start him out against the lower-ranked fighters and let him work his way up through the ranks. Keep in mind that your opponents also have their strengths and weaknesses and that each of them has a special super punch that can end everything for you.

Fight Night's documentation is good, and you are given detailed profiles of each of your computer-controlled opponents as well as tips and strategies to use against them. These tips are not going to give you the upper hand, but they may allow you to hold your own for a while longer.

As with everything else I've seen from Accolade, graphics and sound are great, and play value is high. In Fight Night, graphics are so detailed that even facial expressions seem to change. And it is a game that you can play against the computer or against a friend, giving it more flexibility than is usual in games of this type. I give it high marks on every count. *(Accolade, 20863 Stevens Creek Blvd., Cupertino, CA 95014. C-64/$29.95 disk.)*

**Ervin Bobo**
**St. Peters, MO**

## Report Card

**A** ***Superb!*** An exceptional program that outshines all others.

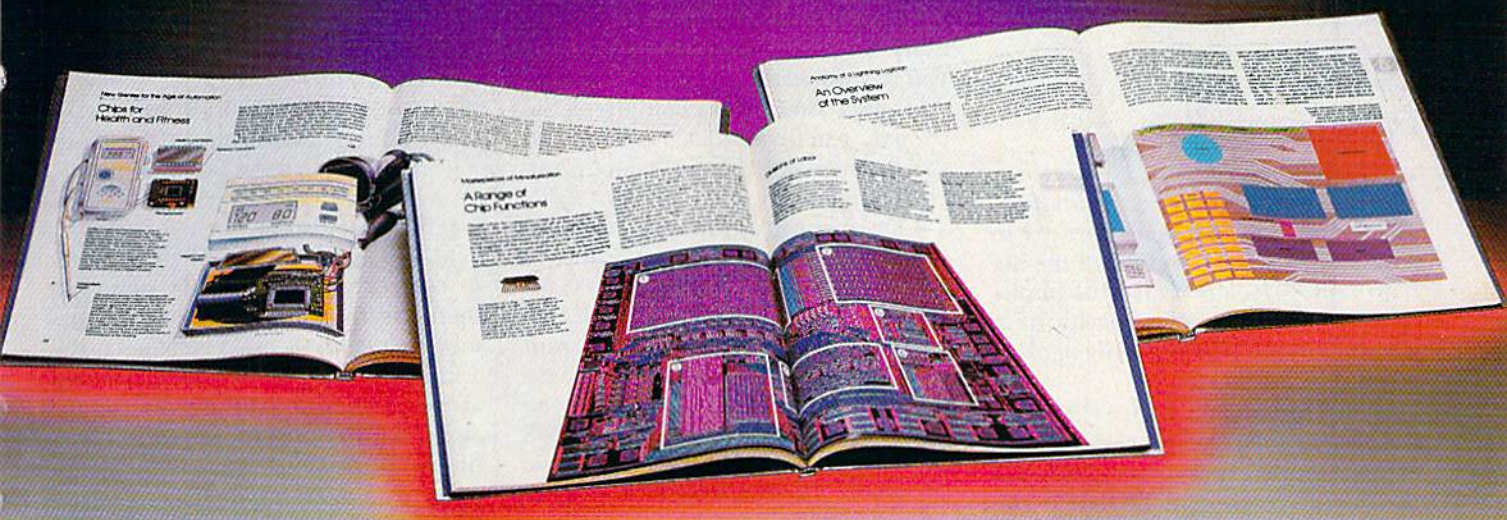
**B** ***Very Good.*** One of the better programs available in its category. A worthy addition to your software library.

**C** ***Good.*** Lives up to its billing. No hassles, headaches or disappointments here.

**D** ***Mediocre.*** There are some problems with this program. There are better on the market.

**E** ***Poor.*** Substandard, with many problems. Should be deepsixed!

# SHELF-BASED EXPERT SYSTEM.




An expert system is like borrowing someone else's experience and expertise on a given subject. UNDERSTANDING COMPUTERS by TIME-LIFE BOOKS is exactly that, an expert system on the subject of computers.

It's not software based, so it can't crash. And since it's not machine-specific, it won't become outdated easily, which means you'll find it an invaluable, long-lived reference whether you have an IBM®PC, an Apple IIe®, a multimillion dollar Cray®, or no computer at all right now.

## A BRAND NEW SERIES THAT PRESENTS COMPUTERS IN A WHOLE NEW WAY.

UNDERSTANDING COMPUTERS is a new series of books that presents computers in a unique, broad-based way, unlike any other computer book you've ever seen. It gets "under the hood," right down to the nuts and bolts of computers to explain what you need to know about them in plain English.

*On a digital record, sound is carried by pits and spaces, which are read by a laser beam.*

The first volume, *Computer Basics*, unwraps the mystery of writing binary code... the concept of logic gates... how chips are designed... how a light pen works for graphic effects... the sequence of events in a computer from the first clock pulse to the last. And much, much more.

Succeeding volumes cover *Software. Input/Output. Graphics. Networking.* The entire gamut of computer topics.

## EVERY IMPORTANT CONCEPT IS ILLUSTRATED TO HELP ASSURE YOU UNDERSTAND.

Not only does UNDERSTANDING COMPUTERS give you all the computer background you want that you won't find elsewhere, it also *shows* you what it's all about. Full-color illustrations help make every concept crystal clear. And glossaries of terms help ensure your understanding. Each volume is a big 9¼" x 11⅛" hardcover book with approximately 128 pages.

## FREE 10 DAY EXAMINATION. NO OBLIGATION.

*How a transistor operates as a switch.*

Begin to expand your computer know-how now by examining *Computer Basics* for 10 days free. Keep it and pay only $12.95 ($15.95 in Canada), plus shipping and handling. Then you can continue to receive other volumes every other month, always with a 10-day free trial. Keep only the books you want. And you can cancel any time. Or return *Computer Basics* and owe nothing.

Return the coupon today, and start to bridge the gap from computer buff to computer expert.

IBM is a registered trademark of International Business Machines Corporation. Apple IIe is a registered trademark of Apple Computer, Inc. Cray is a registered trademark of Cray Research, Inc.
© 1986. Time-Life Books Inc. Time & Life Building, Chicago, IL 60672-2058

## UNDERSTANDING COMPUTERS STARTS HERE.

Mail to TIME-LIFE BOOKS, Inc.
Time & Life Building,
Chicago, IL 60672-2058

YES! Send me *Computer Basics*, as my introduction to the shelf-based expert system, UNDERSTANDING COMPUTERS. I agree to the terms outlined in this ad.

D1A3Z7

Name_____

Address_____

City_____

State or Province_____ Zip or Postal Code_____

All orders subject to approval. Price subject to change.

TIME LIFE BOOKS

# UNDERSTANDING COMPUTERS

# The Body in Focus

A

*Peel Away Secrets Of the Human Body*

Have you ever seen the anatomical models that doctors use to explain the inner workings of the human body? Usually a layer of plastic skin is removed to reveal plastic muscles and organs that fit tightly in place around plastic bones.

With The Body in Focus, CBS Software has created a computerized model of the human body that you can take apart and reassemble in much the same manner. In the process, you can learn about eight major body systems and how they interact to make the whole body function.

The eight systems that you can explore through The Body in Focus are the integumentary (skin), digestive, skeletal, circulatory, muscular, nervous, respiratory and endocrine. They can be studied in any order and are chosen by pressing the corresponding labeled key on the accompanying keyboard overlay.

In addition to an individual key for each major system, the overlay also features keys labeled GO ON, REPEAT and TELL ME MORE. These let you study at your own pace, repeat sections if necessary and skip details when you just want an overview.

To help you understand some of the specialized functions of the body systems, many of the lessons include short animated demonstrations.

The section that works most like the doctor's plastic model is Body Close-Ups. Using the overlay key labeled REVEAL, you can peel away layers that expose muscles, organs, veins, arteries and bones below. Using the CONCEAL key, you can go back and forth among the layers to develop a sense of the physical positioning of the body's various components in relation to one another.

As the illustrations are displayed on-screen, a text window to the right provides the name of each body part, as well as descriptions of how each one functions.

Taken from a database of over 200 questions, another section of the program, Body I.Q., asks 20 randomly selected questions about the human body. By using the Body I.Q. before you've studied the eight body systems, and again after you've completed the lessons, you'll see that The Body in Focus can greatly increase your knowledge of anatomy.

The program's manual contains several illustrations that identify parts of the major systems in greater detail. It also includes a selected bibliography that lists 17 additional sources of information that can help bring your understanding of anatomy into even sharper focus. *(CBS Software, One Fawcett Place, Greenwich, CT 06836. C-64, C-128/$39.95 disk.)*

**Bob Guerra**
**Charlestown, MA**

# MicroLeague Baseball/General Managers Disk

A

*Pit Baseball's Hall of Fame Members Against Your High School's Best Team*

There are many computer baseball simulations that let you pitch, many that let you bat, and even some that let you call the shots as a manager. But, as of this writing, there is only one computer baseball game that lets you run the show from the front office.

That's what makes MicroLeague Baseball with MicroLeague Sports' General Managers/Owners disk (available at additional cost) unique. You get to call the plays on the field *and* create or trade for the players who will make them. This capability enhances what was already one of the best computer baseball games on the market.

In the short time it's been around, MicroLeague has become the standard by which all other baseball strategy games are measured. It is a program designed by baseball lovers for baseball lovers—the kind of folk who have no trouble remembering how many home runs Ted Williams hit in 1956.

These enthusiasts don't necessarily care about joystick jockeying. They like computers because of the way they can juggle the statistics. MicroLeague Baseball is designed for them because even though baseball is best known as a game of inches, it is also a game of statistics.

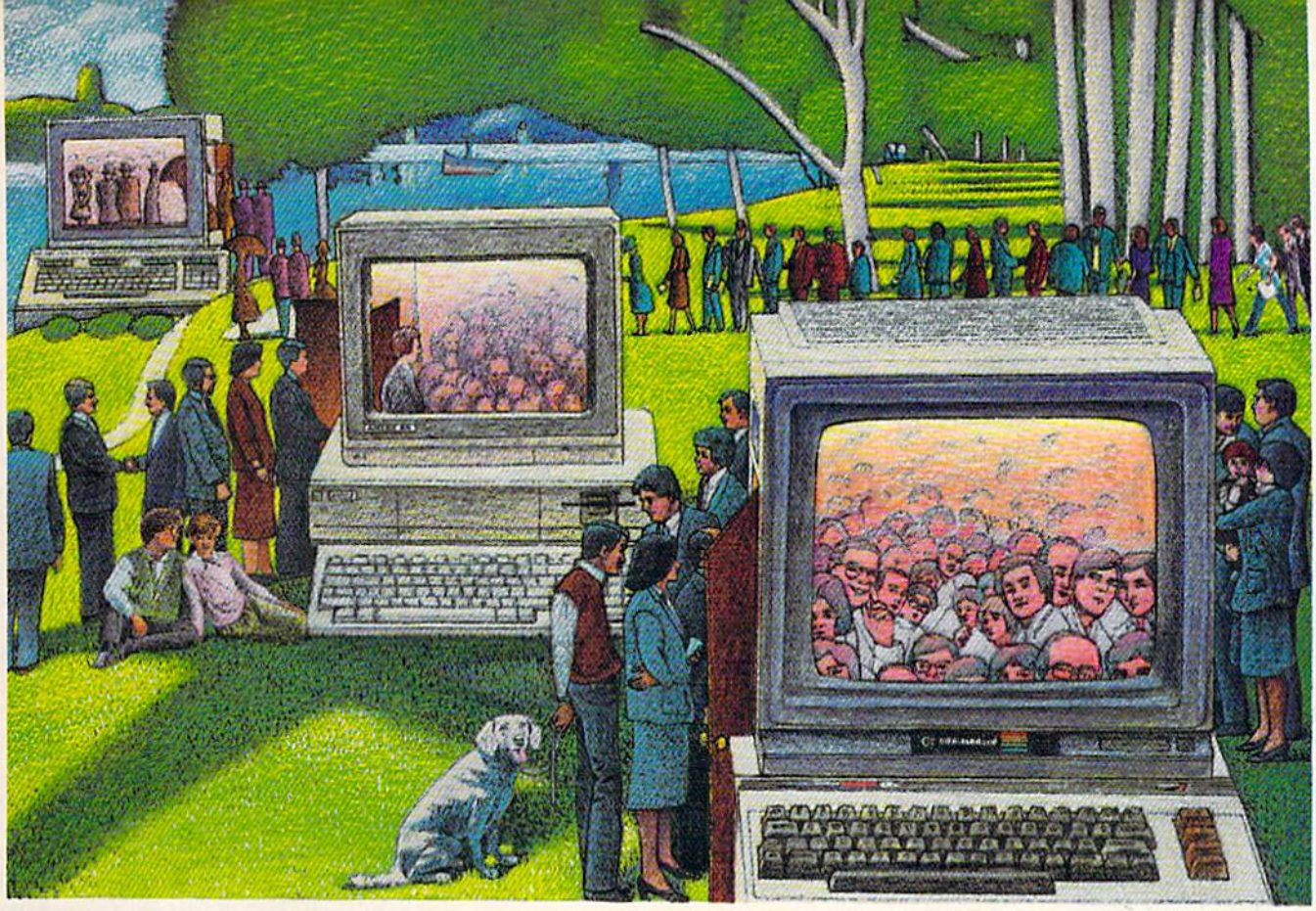
MicroLeague Baseball enables fans to sort through those statistics and then use them while managing former and current major leaguers. It's a fantasy come true for real baseball aficionados, who can test their managing skills against the computer or a human opponent.

The basic game allows all the moves a big league manager has at his command. After picking the team you want to manage (25 actual teams are included, ranging from the powerful 1927 Yankees to the sad sack 1955 Washington Senators), you pick a starting pitcher and lineup. You then select offensive or defensive strategy with a single keystroke.

In the field, for example, you call the type of pitch, decide whether to play the infield in or at regular depth, and even decide when to visit the mound or check your roster for possible substitutions. When your team is at bat, you can choose to steal, pinch run, hit-and-run, sacrifice or use aggressive base running.

Once both managers make their calls, MLB goes to work, determining the outcome of every play. Factors such as a batter's success against left-handed pitching or a pitcher's wildness in late innings are taken into account by the program.

The graphics are first rate. The game screen shows a baseball dia-



# USE THE BRAINS YOUR COMMODORE WASN'T BORN WITH.

## Right at Your Fingertips in CompuServe's Commodore® Forums

Our Commodore Forums involve thousands of Commodore users worldwide. These Forums show you just how easy and fun it is to get the most from your Commodore Computer.

The Commodore **Communications Forum** provides the latest news on communications software and advice on how to effectively use your machine for online computing.

The Commodore **Programming Forum** supports programmers and developers of Commodore 8-bit computers.

The Commodore **Arts and Games Forum** is for all Commodore 8-bit computers. Compose or play music, create or retrieve colorful graphics, and download games software.

The Commodore **Amiga® Forum** is the national resource for all business and entertainment applications in the Amiga community.

**Easy access to free software.**

- *Download first-rate, non-commercial user-supported software and utility programs.*
- *Take advantage of CompuServe's inexpensive weeknight and weekend rates (when Forums are most active, and standard online charges are just 10¢ a minute).*
- *Go online in most major metropolitan areas with a local phone call.*
- *Receive a* ***$25.00 Introductory Usage Credit*** *when you purchase your CompuServe Subscription Kit.*

**Information you simply can't find anywhere else.**

Use the Forum *Message Board* to exchange mail with fellow members. Join ongoing, real-time discussions in a Forum *Conference*—with Commodore luminaries like Jim Butterfield, Jim Gracely, Bob Landwehr and Steve Punter. Scan Forum *Data Libraries* for free software, documentation and contributions from Commodore enthusiasts.

Enjoy other useful services, too. Like electronic editions of your favorite magazines, newsletters and articles, including Family Computing, OMNI Online and the Electronic Gamer.™

**All you need is your Commodore computer and a modem...or almost any other personal computer.**

To buy your Subscription Kit, see your nearest computer dealer. Suggested retail price is $39.95. To receive our free brochure, or to order direct, call 800-848-8199 (in Ohio, call 614-457-0802). If you're already a CompuServe subscriber, type GO CBMNET (the Commodore Users Network) at any ! prompt to see what you've been missing.

**CompuServe®**

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220

**800-848-8199**
In Ohio, call 614-457-0802

An H&R Block Company

Circle 64 on Reader Service card.

mond from the perspective you'd get sitting in the second or third level behind home plate in a major league stadium.

At the top of the screen, a scoreboard displays the current inning, number of outs and each team's name, runs, hits and errors. Superimposed over the lower left and right sides of the diamond are the names of the player at bat, the one on deck and the pitcher.

Every play explodes into a flurry of on-screen activity. When a ball is hit, players dash to snare it, runners charge around the bases and the batter bolts for first. Animation is very smooth and realistic. And just to make sure there's no confusion about what's happening, the scoreboard provides a play-by-play narrative of the action.

It's hard to find fault with MLB. It gives baseball fans an opportunity to live out the dual fantasies of managing major league players and pitting players of different eras against each another. A Babe Ruth-Sandy Koufax confrontation can become a reality through MLB.

If that doesn't excite you, why not pitch to Ruth or bat against Koufax yourself? You can by using MLB's General Managers/Owners disk, which permits owners of MLB to trade players from one team to another or create entirely new teams and players.

Possibilities are limited only by your imagination. The GM/Owners disk enables you to make trades between teams from different eras. Imagine adding pitching superstars Koufax and Don Drysdale to the awesome offensive roster of the 1927 Yankees....

That team might beat every other one in the history of the game. But could it beat your old high school championship team? The GM/Owners disk permits you to create 25-man rosters made up of just about anybody you care to put on them. All you need do is follow simple on-screen, menu-driven directions and provide positions and statistics for each player. You can get that information from a baseball encyclopedia. Or make up superstar-caliber stats for your old high school teammates and let them take on the world.

MicroLeague Baseball with the GM/Owners disk makes all of that possible and does so flawlessly. The operation, instructions and graphics are all outstanding, and the programming is so good that MLB game results are very realistic. So much so that the program is endorsed by Major League Baseball and Detroit Tigers manager Sparky Anderson.

But don't take their word for it. MicroLeague Baseball is the answer to the dreams of baseball fans everywhere. If you've always wanted to manage big leaguers or create a dynasty of your own, MicroLeague Baseball is your ticket to paradise. *(MicroLeague Sports Association, 2201 Drummond Plaza, Newark, DE 19711. C-64/$39.95 each disk.)*

**Scott Wasser**
**Wilkes-Barre, PA**

# Quizam!

**B**

## *Cygnus Takes the Triviality out of Trivia Games*

If you still enjoy playing trivia games, Quizam! is worth a good look. Cygnus, the company that brings you Quizam!, has added sparkle to a game genre that had seemingly lost its lustre.

The key to Quizam!'s success is explained on the cover of this disk-based program. It says, "Finally...a computer trivia game where the computer isn't trivial." Quizam! not only makes use of the computer, it depends on it. The program requires your C-64 to select and display questions, evaluate your answers, keep a running score for each player, display a game board and provide musical accompaniment to game play.

Particularly impressive are Quizam!'s many options. You and up to seven of your friends can play on any of eight different game boards at any of eight levels of difficulty. The game can be played in a long or short version, using a joystick, paddle or keyboard.

Over 2,000 questions in two categories are provided with Quizam! One disk contains two sets of "Fun Facts" questions (one set on each side of a disk). The main game program disk contains "School Days" questions on its flip side.

The Fun Facts subjects are: 15-minute celebrities, sports and games, popular culture, television, potpourri, publications, music and movies. The School Days topics are: vocabulary, history, art, physical science, geography, literature, music and life science. Cygnus claims that other question disks are already available and more are coming.

Each of the eight subjects on a question disk tests your knowledge with 85 questions. Questions are not repeated until each one has been asked. That means you can play a few games, turn off the computer and not have to go through the same questions the next time you play.

If that's not enough variety, Quizam! includes a "Quizzer" feature that enables you to create your own question disks. The potential here seems limitless. For example, members of a Commodore user's group could create a disk filled with questions related to the C-64. Or you could create one with questions about relatives and play it at family gatherings.

Using Quizzer to create your own question disks is easy. So too, for that matter, is it easy to play Quizam! The program design and instruction manual are straightforward. Once you get past the menu-driven option screen, game play proceeds smoothly.

That's because your C-64 is running the show. First it displays the multi-color game board on your monitor. Using a joystick, you begin play by pressing the fire-button. The monitor then displays the question screen, at the bottom of which is a bar divided into eight colored segments. This screen also displays the title of the question topic and the name and score of the current player.

Within seconds, you're prompted to press the fire-button again. That begins a sequence in which a question and four multiple-choice answers are displayed in ticker-tape fashion. As soon as the last choice is presented, the bar at the bottom of the screen begins to shrink as the computer begins a countdown.

# Fleet System 2.™
# Word processing that *spells* V-A-L-U-E.

## Complete word processing with built-in 90,000 word spell checking - Only **$69.95**

Up till now, you'd have to spend a minimum of about $70 to get a good word processor for your Commodore 64™/128™. And if you added a small, *separate* spell checking program, you'd be out well over $100!

Now there's Fleet System 2! It's two powerful programs in one, and it's perfect for book reports, term papers or full office use.

Fleet System 2 combines the EASIEST and most POWERFUL word processor available with a lightning-fast 90,000 word spelling dictionary — all in one refreshingly EASY TO USE integrated system. Finally, spell checking is now available at your fingertips.

You can even add over 10,000 "custom" words to the built-in 90,000 word dictionary. And at a suggested retail price of $79.95, Fleet System 2 really spells V-A-L-U-E, and 90,000 other words too!

Fleet System 2 helps people of all ages to learn to *spell correctly* and *write better* too. It's the ONLY full featured word processor that provides you with helpful writing and VOCABULARY FEEDBACK such as: the total number of words in your document, the number of times each word appears, and total number of "unique" words, just to name a few.

Fleet System 2 has every important feature that will help you make child's play out of the most heavy duty typing tasks. There's Built-in 80 Column Display — so what you see is what you get, Horizontal Scrolling During Typing, Easy Correction and Movement of Text, Page Numbering, Centering, Indenting, Headers and Footers, Math Functions, Search and Replace, Mail Merge, BUILT IN 90,000 word SPELL CHECKING and much, much more!

*Ask for Fleet System 2. Exceptionally Easy. Packed with Power. Perfectly Priced.*

UNITED STATES COMMODORE USERS GROUP APPROVED

PSI Call 1-800-343-4074 for the Dealer nearest you!
Professional Software, Inc., 51 Fremont Street, Needham, MA 02194 (617) 444-5224

Fleet System 2™ is a trademark of Professional Software, Inc. — Fleet System 2™ was designed and written by Visiontronics, Ltd. — Commodore 64™ and Commodore 128™ are trademarks of Commodore Electronics Ltd. — Some printers may not support certain Fleet System 2 functions and/or require an interface. Please check with your dealer. — Dealer and Distributor inquiries are invited.

You choose your answer by pushing the joystick in the appropriate direction while holding down the fire-button. The difficulty levels determine the number of guesses you may make in a given turn.

The quicker you provide the correct answer, the more spaces you can move on the game board. The object is to land on a space occupied by a satellite, then correctly answer a question and collect that satellite.

Strategy is an important part of Quizam! because a player must move the exact number of spaces determined by the time remaining when a question was answered. If you're sure you know the correct answer, wait until the computer counts down to the number of spaces you need in order to land on a satellite before guessing. In most cases, that means you'll be giving up the opportunity to guess again if you're wrong.

By requiring players to use strategy and a computer, Cygnus has added freshness to a game idea that had been turning stale. My only complaint is that at least one question provided with the game is impossible to answer correctly. There may be others, but I didn't come across them in several hours of play.

The incorrect question-and-answer notwithstanding, Quizam! is an excellent program for those Commodore owners who enjoy trivia games. *(Cygnus, PO Box 57825, Webster, TX 77598. C-64/$39.95 two-disk set.)*

**Scott Wasser**
**Wilkes-Barre, PA**

# Shadowfire

C

*Rescue a Kidnapped Emissary Carrying Plans For a Top-secret Starship*

There are elements of a text adventure in Shadowfire, although you control the action with a joystick and icons; there are elements of a role-playing fantasy, although you cannot alter traits but only work with them; there are even elements of a maze game. With all these working for it, you'd expect Shadowfire to be one heck of a game—yet it comes close to being overburdened by its own complexity.

In the far future, an emissary carrying plans for the top-secret starship Shadowfire is kidnapped by the villain, Zoff. Zoff has not yet found the plans (they are embedded in the emissary's spine), but time is running out, and he who possesses the Shadowfire will control the universe.

Your mission as commander of the Enigma team is to beam aboard Zoff's spaceship and, within one hundred minutes of real time, rescue the emissary, capture Zoff and destroy the spaceship.

From a menu of icons, you select up to six Enigma team members. Once a team member is selected, the next screen shows that character's agility, stamina and strength as well as the weight he can carry.

The Objects screen allows you to arm your character, and it is here that things begin to get tedious. You click on the Pickup icon, then go to the object and click on it. Should you wish to have that object ready for use, you must first click on the Ready icon, then click on the object. All this takes place in the bottom half of the screen.

The top half of the screen shows a scrolling-message bar, a set of icons representing the characters, the section of Zoff's spaceship your character currently occupies and a close-up of the character with whom you are currently working.

With all this taking up half the screen, resolution suffers, and the small size some of the icons are forced to assume sometimes makes it difficult to know who is doing what.

The bottom half of the screen lets you select options for the character. You can control your character's movement, select his armaments and send him into battle. Other options allow you to choose whether to attack, hold or retreat.

If you feel inadequate to the task, you can probably go back to the Objects menu, pick up the Transporter, beam down to pick up a weapon, drop the Transporter, activate the Transporter, beam up and. . . you get the idea.

There are two major flaws in Shadowfire: In a game where you must race against a clock, it does not seem fair that each move should consist of several sub-moves; nor does it seem right that a scenario with such action potential should become bogged in the tedium of continually moving two steps back in order to go one step forward.

Documentation is good, but keep it close by for complex moves. The sound is minimal and graphics are as good as you can expect from such a crowded screen. While it may deserve an E for effort, Shadowfire ends up with a grade average of C—they forgot to make it fun. *(Mindscape, Inc., 3444 Dundee Road, Northbrook, IL 60062. C-64/$29.95 disk.)*

**Ervin Bobo**
**St. Peters, MO**

# Bank Street Mailer

*Zip Through Those Seemingly Endless Letters and Cards*

B

Do you write many business or form letters, or have you a Christmas- or birthday-card list as long as your arm? If so, you could probably make good use of Broderbund Software's Bank Street Mailer program, which is designed to make letter writing, addressing and mailing as efficient and effortless as possible.

The first of Bank Street Mailer's two separate yet integrated programs is a letter-writing program. With its on-screen menus and prompts, you can easily correct mistakes, number pages, move blocks of copy, highlight words or phrases and place text where you want it. There's even a help screen that can be accessed at any time. The word processing functions in the Letter-writing mode are patterned after those in the popular Bank Street Writer program. So if you've used that package, you already know how to use this one.

Since Bank Street Mailer is designed primarily for letter writing, it adds some functions to help you do that. You can automatically add dates, addresses, salutations and closings to any letter. It also enables you to "personalize" form letters by automati-

Circle 104 on Reader Service card.

# TRACKER

## SOPHISTICATED COMBAT SIMULATION FOR YOUR COMMODORE 64™/128™

THE MISSION – Terminate renegade artificial intelligence
THE BATTLE – Tactical Remote Assault Corps VS Cycloid AL Resistance

firebird

## TRACKER

THE STORY – The World could never be the same. An artificial intelligence superior to man set loose to learn, to grow, to control. A computer with sophisticated defense forces which must be beaten. A complex battle zone too dangerous for man, where crucial remote units must survive to conquer. The remote army is led by Chandos, supreme space conflict veteran, determined to avenge the death of his son.

THE GAME – TRAC forces landed in safe outer zones must sever communication links between the central computer and its slave outposts. The battle area is made up of trackways joined together by over 2000 nodes to form a complex web. Opposing forces will judge your strength and agility and deploy its Cycloid forces accordingly. Controlling up to 8 skimmers at one time, you must move strategically around the terrain to knock out slave computers and communication links and gradually gain control of the zones. On encountering Cycloid fighters you pilot a skimmer by remote control and chase, fight, dodge or retreat accordingly. The one to one fighting action is displayed on screen in fast 3D and requires arcade skills to succeed.

RAINBIRD 68000 RANGE

CHARTBUSTERS

FACTSHEET/ORDER HOTLINE: 201.934.7373 FIREBIRD LICENSEES INC. P.O. BOX 49, RAMSEY, N.J. 07446

COMMODORE 64/128 ARE TRADE MARKS OF COMMODORE BUSINESS MACHINES

Circle 81 on Reader Service card.

COPY II 64/128™

**BACKUP PROTECTED SOFTWARE FAST.**

From the team who brought you COPY II PLUS (Apple), Copy II PC (IBM) and COPY II MAC (Macintosh) comes a revolutionary new copy program for the Commodore 64 and 128 computers.

- Copies many protected programs—automatically. (We update Copy II 64/128 regularly to handle new protections; you as a registered owner may update at any time for $15 plus $3 s/h.)
- Copies even protected disks in under 2 minutes (single drive).
- Copies even protected disks in under 1 minute (dual drive).
- Maximum of four disk swaps on a single drive.
- Includes fast loader, 12-second format.

Requires a Commodore 64 or 128 computer with one or two 1541 or 1571 drives.

**Call 503/244-5782,** M–F, 8–5:30 (West Coast time) with your in hand. Or send a check for $39.95 U.S. plus $3 s/h, $8 overseas.

**$39.95**

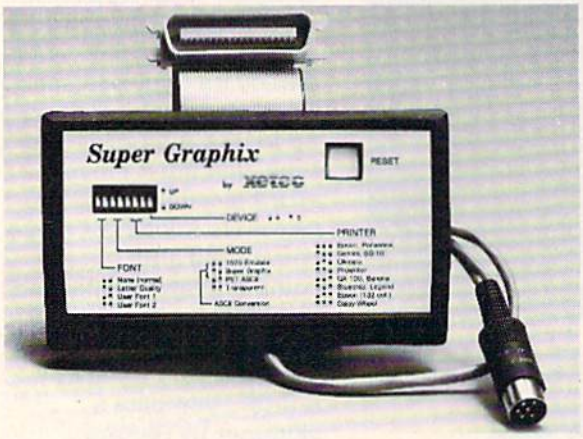
Central Point Software, Inc.
9700 S.W. Capitol Hwy. #100
Portland, OR 97219

Central Point Software INCORPORATED

*Backup utilities also available for the IBM, Apple II, Macintosh and Atari ST.*
*This product is provided for the purpose of enabling you to make archival copies only.*

Circle 96 on Reader Service card.

**Super Graphix**




***You Asked For It . . . Here It Is!!!***

**GRAPHICS and FONTS plus an 8K BUFFER for the ultimate in performance and speed. The XETEC Super Graphix interface for Commodore Computers now offers a new high in technology with these features:**

- 8K Buffer Standard
- 10 Printing Modes
- 3 Internal Screen Dumps
- Extensive Command Channel
- Reset Button to Halt Printing from Buffer
- Switch Settings on Label for Quick Reference
- Correspondence Quality Font Built-In
- Capable of Storing 2 Additional Fonts
- Correct Graphics/Text Aspect Ratio for all Major Printers
- 8 Active Switches with Changes Constantly Monitored
- Internal Fonts Support Super-script, Sub-script, Underlining, Bold-face and Choice of 9 Pitches

***Suggested list $99.95 • Includes Lifetime Warranty***

**XETEC, Inc. / 3010 Arnold Rd. / Salina, KS 67401 / 913-827-0685**



cally changing just the address and salutation on any letter as it is being printed.

This is where the other program on Bank Street Mailer comes into play. It's a mini-database that enables you to store the names, addresses and other important information about businesses or people to whom you might write. That information can then be merged into the letter-writing program.

The mailing-list program is also menu driven, and both menus and prompts are on the screen at all times. There are nine preset fields in the mailing program that handle just about all mailing-list information you'd need to put on an envelope or letter. You can also add up to six additional fields to keep track of items such as birthdays and anniversaries.

Since this program functions like a database, you could set up a mailing list of everyone to whom you send birthday cards, making "Birthday" one of your optional fields. Then, once a month, you could boot up the program and your data disk and request that mailing labels or envelopes be addressed for those people whose birthdays are in that month. The program will automatically find, sort and print only those names and addresses that meet your criteria.

The documentation comes in three forms. The first is an 83-page instruction manual that is both complete and easy to follow. But you may never need to use it, because Bank Street Mailer includes a set of "quick start" instructions on an index card. And, if that's not enough, there's also a disk-based tutorial that guides you through all of the program's functions and let's you try many of them.

Bank Street Mailer is compatible with the other Bank Street programs, Writer, Speller and Filer, and that means you can, for example, use the speller to check letters you've written with Bank Street Mailer.

You'll probably find yourself writing a lot more of those letters if you get Bank Street Mailer, because this is one productivity program that really produces. *(Broderbund Software, 17 Paul Drive, San Rafael, CA 94903. C-64/$49.95 disk.)*

**Scott Wasser**
**Wilkes-Barre, PA**

NEW

# PARTNER 128

## THE 1ST DESKTOP ACCESSORY THAT WORKS "CONCURRENTLY" WITH OTHER C128 SOFTWARE.

**PARTNER! A cartridge-based program with eight convenient memory-resident desktop "accessories" that operate "concurrently" with other C128*TM software programs.**

**Like Sidekick*TM, PARTNER automagically suspends the existing program in your computer while you use the PARTNER accessories. When you are through, press a button and PARTNER returns you to the point in your program where you left off.**

### Accessories at your command:

- **Appointment calendar and date book:** Keep track of appointments and deadlines. At the press of a key, you'll be able to review your appointments for a day, week, or month. Months may be viewed in their entirety in a traditional calendar format, and then printed out.
- **Memo pad:** Write yourself important notes. Print them out on paper or save them onto disk.
- **Name and address list:** Keep track of important names and addresses. Available instantly, any time you are using your computer.
- **Calculator:** A multi-function calculator with an optional "paper tape" that prints out your calculations on your printer.
- **Typewriter:** Turns your computer and printer into a traditional typewriter.
- **Envelope addresser & label maker:** Use this feature and your name and address list to address envelopes or create mailing labels – quickly, without leaving the software you are working with.
- **Phone list & auto dialer:** Keep track of important phone numbers. At your command, the computer will search through your list for the number you want, and automatically dial the number for you.**
- **Screen print:** At the press of a key, the contents of your computer display will be duplicated on your printer.

### Other features:

- **SwiftDOS:** Allows you to access Commodore disk drive commands any time.
- **SwiftLock:** Enter your secret code before you leave your computer. The keyboard will be locked until you re-enter your code.
- **Extended Printer Control:** Allows you to send commands directly to your printer at any time.
- **SwiftLoad:** Allows your Commodore 1541 disk drive to load as fast as the Commodore 1571 disk drive.

**Suggested Retail Prices:**
C128 (128K, 80 column):
**$69.95**
C64* (64 K, 40 column):
**$59.95**

Available at your favorite Dealer, or call Timeworks today.

**TO ORDER CALL:**
**1-800-535-9497**

CUSTOMER TECHNICAL SUPPORT HELPLINE – Toll-Free

MONEY BACK GUARANTEE
Details on every package

TIMEWORKS®

***More power for your dollar***

**Timeworks, Inc. 444 Lake Cook Rd., Deerfield, IL 60015**
**312-948-9200**

** An auto-dial modem is required to use the phone-dialer feature.

*Commodore 128™ is a trademark and Commodore 64 is a registered trademark of Commodore Electronics, Ltd., Sidekick is a trademark of Borland International, Inc.

© 1985 Timeworks, Inc. All rights reserved.

Circle 3 on Reader Service card.

# LYCO COMPUTER

## MARKETING & CONSULTANTS

**NEW HOURS**
Mon-Thur—9 AM-8 PM
Fri—9 AM-6 PM
Sat—10 AM-6 PM

### PRINCETON GRAPHICS
MAX-12 Amber ..... 175
HX-12 RGB ..... 458
SR-12 RGB ..... 575

### COMMODORE
1571 ..... CALL
1541 ..... CALL

### INDUS
GT Commodore ..... 179

### COMTEL
Enhancer 2000 (C-64) ... 149

### COMMODORE
128 ..... CALL
C 1902-A ..... CALL
C 1350 Mouse ..... 39
C 1700 128 K RAM .... 145
C 1750 512 K RAM .... 269
Sane ..... 35
Perfect Writer ..... 45
Perfect Calc ..... 45
Perfect Filer ..... 45

### EPYX-64
Movie Monster ..... 24.75
Vorpol Kit ..... 22.75
Fast Load ..... 24.75
Summer Game II ..... 24.75
Super Cycle ..... 24.75
World Games ..... 24.75
Football ..... 24.75

### 5¼" DISKETTES
#### MAXELL
SSDD ..... 9.99
DSDD ..... 12.99

#### VERBATIM
SSDD ..... 9.50
DSDD ..... 12.99

#### BONUS
SSDD ..... 6.99
DSDD ..... 7.50

#### SKC
SSDD ..... 8.50
DSDD ..... 9.50

### 3.5" DISKETTES
#### 3M
SSDD ..... 16.99
DSDD ..... 23.99

#### MAXELL
SSDD ..... 16.99
DSDD ..... 23.99

#### VERBATIM
SSDD ..... 16.99
DSDD ..... 24.99

#### SKC
SSDD ..... 14.99
DSDD ..... 19.99

### XETEC
Font Master II 64 .... 32.95

TOLL FREE 1—800—233—8760

### ACTIVISION (C-64/128)
Alter Ego ..... 28.75
Hacker ..... 18.75
Little People ..... 20.75
Game Maker ..... 24.75
Borrowed Time ..... 18.75
Space Shuttle ..... 18.75
Music Studio ..... 22.75
Mind Shadow ..... 18.75
Road Race ..... 18.75
Fast Tracks ..... 22.75
Count Down ..... 18.75
Basketball ..... 18.75

### SUBLOGIC
Nightmission Pinball ..... 18.95
Flight Simulator ..... 29.95
Set Simulator ..... 25.95
Football ..... 25.95
Scenery Disk ... Each 14.95
Set 1-6 ..... 69.96

### BATTERIES INCLUDED
Paperclip ..... 35.95
Consultant ..... 35.95
Paperclip W/Spell Pack ..... 48.95

### BRODERBUND
The Print Shop ..... 24.75
Graphics Library I, II, III ..... 15.75
Karateka ..... 17.75
Bank Street Writer ... 29.75
Lode Runner ..... 19.75
Printshop Comp ..... 24.75
Bank Street Speller ... 29.75
Bank Street Filer .... 29.75
Bank Street Mailer ... 29.75
Championship Lode Runner ..... 19.75

### SSI
Colonial Conquest ... 22.75
Wings of War ..... 22.75
Computer Ambush ... 32.75
Field of Fire ..... 22.75
Fighter Command .... 34.75
Kampfgruppe ..... 34.75
Mech Brigade ..... 34.75
Market Garden ..... 22.75
Sux Gun Shootout ... 22.75
Computer Baseball ... 22.75
Computer Quarterback ..... 22.75
Imperium Galactum ... 22.75
Phantasie ..... 22.75
Cartels & Cutthroats ... 22.75
50 Mission Crush .... 22.75
Questron ..... 22.75
Gemstone Warrior ... 22.75
Battellion Commander ..... 22.75
Panzer Grenider ..... 22.75
Norway 85 ..... 22.75
U.S.A.A.F. ..... 34.75
Battlegroup ..... 34.75
NAM ..... 22.75
Phantasie II ..... 22.75
Wizards Crown ..... 22.75
Rings of Zelphin ..... 22.75

### ACTIVISION (Amiga)
Hacker ..... 26.75
Mind Shadow ..... 26.75
Music Studio ..... 34.75
Borrowed Time ..... 26.75

### ACCESS (C-64 — Amiga)
Leader Board ..... 24.75
Leader Board Amiga ..... 24.75
Tournament I ..... 12.75
MACH 128 ..... 28.75
10th Frame ..... 24.75

*Buy Lyco and Enjoy*

★ THE LOWEST PRICES ★ TOLL FREE ORDER LINE ★

★ Free shipping on prepaid cash orders in U.S. ★ All Merchandise Factory Fresh ★ Fast Service from one of the oldest and most established Computer Supplier ★ 24 hrs. shipping on in-stock product ★ Access to our Multi Million $ inventory ★ No deposit on UPS C.O.D. orders ★ Orders outside PA Save state sales tax ★ Air freight service available ★ Full Manufacturer's Warranty apply! ★ Full accessory line in stock ★ Purchase orders Accepted from educational institutions! ★ We check for stolen credit cards! ★ We ship to our servicemen overseas! ★ You'll love our Courteous Sales Staff! ★ We satisfy more customers monthly than most of our competitors combined ★

# LYCO COMPUTER

## MARKETING & CONSULTANTS

### C.ITOH

| | |
|---|---|
| 1550 SP+ | CALL |
| D1040 | CALL |
| Prowriter Junior | CALL |
| Prowriter 8510 SP+ | CALL |

### PANASONIC

| | |
|---|---|
| 1080 | 195 |
| 1091 | 225 |
| 3131 | 249 |
| 1092 | 309 |
| 1592 | 419 |
| 1595 | 595 |

### OKIDATA

| | |
|---|---|
| Okimate 10XE | 179 |
| 292 | CALL |
| 293 | CALL |
| Okimate 20ST | 199 |
| 120 NLQ | 205 |
| 182 | 214 |
| 192 | 348 |
| 93 | CALL |

### JUKI

| | |
|---|---|
| Juki 6100 | CALL |
| 5510 Juki | CALL |
| Juki 6300 | CALL |
| RS-232 Serial Board | 55 |
| Color Kit | 105 |
| 6100 Tractor | 119 |
| 6100 Sheet Feeder | 209 |

### EPSON

| | |
|---|---|
| LX80 | CALL |
| FX85 | CALL |
| DX10 | CALL |
| HI80 | CALL |
| HS80 | CALL |
| FX286 | CALL |
| LQ800 | CALL |
| LQ1000 | CALL |

### STAR MICRONICS

| | |
|---|---|
| LV 12-10 (New) | CALL |
| NL-10 | CALL |
| NX-10 | CALL |
| NB-15 | CALL |
| SB-15 | CALL |
| SG-15 | 367 |
| SD-10 | 319 |
| SD-15 | 438 |
| SR-10 | 469 |
| SR-15 | 578 |
| SB-10 | 589 |

1080 ....$195 **SAVE** ON THESE IN STOCK **PRINTERS** NX-10 ...CALL

### SEIKOSHA

| | |
|---|---|
| SP-1000 VC (C-64) | 175 |
| SP-1000 A Centronics | 195 |
| SP-1000 IBM | 195 |
| SP-1000 As RS-232 | 195 |
| SP-1000 AP Apple IIC | 195 |
| BP-1300 | 469 |
| BP-5200 | 649 |
| BP-5420 | 999 |
| Color Kit | 119 |
| BP-5420 Ribbon | 12.50 |
| SP-1000 Ribbon | 8.50 |

### CITIZEN

| | |
|---|---|
| 120-D | 179 |
| MSP-10 | 285 |
| MSP-15 | 385 |
| MSP-20 | 325 |
| MSP-25 | 485 |
| Premier 35 | 469 |

### LEGEND

| | |
|---|---|
| 808 | 148 |
| 1080 | CALL |
| 1380 | 229 |
| 1385 | 289 |

### BROTHER

| | |
|---|---|
| HR-15XL-P | 359 |
| HR-15XL-S | 359 |

### SILVER REED

| | |
|---|---|
| EXP 420P | CALL |
| EXP 600P | 489 |
| EXP 800P | 649 |
| EXP 770 | 740 |

### DIABLO

| | |
|---|---|
| D25 | 549 |
| P-32 CQI | 699 |
| 635 | 1029 |
| P-38 | 1749 |
| D-80 IF | 2395 |

### TOSHIBA

| | |
|---|---|
| 321 P/S | 495 |
| 351 Sheet Feeder | 529 |
| P 341P | 969 |
| P 341S | 999 |
| P 351+ | 1149 |

## MONITORS

### TEKNIKA

| | |
|---|---|
| MJ-10 | 149 |
| MJ-22 | 249 |
| MS-305 RGB | 309 |

### HITACHI

| | |
|---|---|
| MM-1218 12" Green | 99 |
| CM-1406 13" Color W/Cable | 179 |

### PANASONIC

| | |
|---|---|
| TR-122 MYP 12" Amber TTL | 139 |
| TR-122 MYP 12" Green TTL | 139 |
| TX-12H3p 12" RGB | 369 |
| DT-H103 10" RGB | 349 |

### THOMPSON

| | |
|---|---|
| 365 12" RGB | CALL |

### NEC

| | |
|---|---|
| Multisync | CALL |

### ZENITH

| | |
|---|---|
| ZVM 1220 | 89 |
| ZVM 1230 | 89 |
| ZVM 1240 | 149 |

## INTERFACING

### CARDO

| | |
|---|---|
| G-Wiz (C-64) | 47 |
| Super G (C-64) | 54 |
| C/? PS (C-64) | 37 |

### XETEC

| | |
|---|---|
| Super Graphix 64 | 64 |
| Super Graphix SR 64 | 45 |

### TYMAC

| | |
|---|---|
| Connection (C-64) | 49 |

### ORANGE MICRO

| | |
|---|---|
| Grappler CD (C-64) | 79 |

## MODEMS

### DSI

| | |
|---|---|
| Messenger 64/128 | 39.95 |

### SUPRA

| | |
|---|---|
| 1064 Modem (C-64) | 49.95 |

### COMMODORE

| | |
|---|---|
| 1670 Modem | 155 |

**Compuserve....18.95**

# TOLL FREE 1-800-233-8760

In PA 717-494-1030
Customer Service 717-494-1670

MasterCard VISA

or send order to
Lyco Computer
P.O. Box 5088
Jersey Shore, PA
17740

### RISK FREE POLICY

In stock items shipped within 24 hours of order. No deposit on C.O.D. orders. Free shipping on prepaid cash orders within the continental U.S. Volume discounts available. PA residents add sales tax. APO, FPO, and international orders add $5.00 plus 3% for priority mail service. Advertised prices show 4% discount for cash, add 4% for MasterCard and Visa. Personal checks require 4 weeks clearance before shipping. We do not guarantee compatibility. We only ship factory fresh merchandise. Ask about UPS Blue and Red label shipping. All merchandise carried under manufacturer's warranty. Return restriction applicable. Return authorization required. All items subject to change without notice.

# Computerize Your Finances

*Be "cents-ible" about home money management by taking advantage of the many available commercial and public domain programs that help you keep track of your finances.*

By JOSEPH J. SHAUGHNESSY

I'm sure you remember the fable of the grasshopper and the ant. The ant worked hard all summer long, storing up food for the winter, while the grasshopper laughed and sang and danced in the sunlight. When the cold winds of winter came, the grasshopper would have perished if the kind-hearted ant hadn't taken him in.

The moral is obvious, and it applies to personal finances as well as to household larders. In fact, it's really amazing that so many of us are financial grasshoppers. We save bills, receipts, check stubs and other records in old shoeboxes, manila folders or just piled in odd corners. We budget by paying our bills one at a time, more or less at random, until we run out of money. Because of our haphazard methods, every once in a while the financial winter catches up with us.

Let's assume you'd like to turn over a new leaf and get your finances organized to avoid those lean times. How can your computer help? First of all, it can store your financial records. Then, on the basis of those records, it can paint a picture of your financial history, show you where you stand now, and even extrapolate into the future. It can outline such things as spending patterns, possibilities for saving and relationships between income and outgo.

Have you ever asked yourself, "Where did all that money go?" Personal-finance software can help you answer that question, and others you didn't even know enough to ask.

Personal-finance software includes programs to handle your checkbook, budget development, financial analysis, investment planning and income-tax preparation. You can get the software from commercial sources, or, at little or no cost, from magazines like *RUN* and from public-domain sources such as user's group libraries, on-line networks and local bulletin boards.

Public-domain programs generally perform a limited number of functions, and they usually come without instructions or other support, which may be a problem when you're dealing with calculations you don't fully understand. However, documentation text files are included on some public-domain disks. Most full-featured commercial programs come with an instruction manual, and usually the companies behind them will respond to your questions.

A list of commercial personal-finance software that is currently available for the C-64 and C-128 appears in Table 1. Table 2 lists sources of public domain or low-cost software.

### *Checkbook Programs*

There are a lot of checkbook programs around. I hate to say it, but disillusionment with these programs often keeps people from going on to try the more complete financial programs available. One problem with checkbook programs is that, after typing in all of your checking transactions, you end up with a report that is basically the same as the monthly statement your bank sends you for free.

Another problem is the time it takes to use a checkbook program. I reconcile my checkbook against the statement from the bank every month—a simple process that has never taken me longer than ten minutes to do by hand. I did it by computer a few times, and it never took less than 25 minutes.

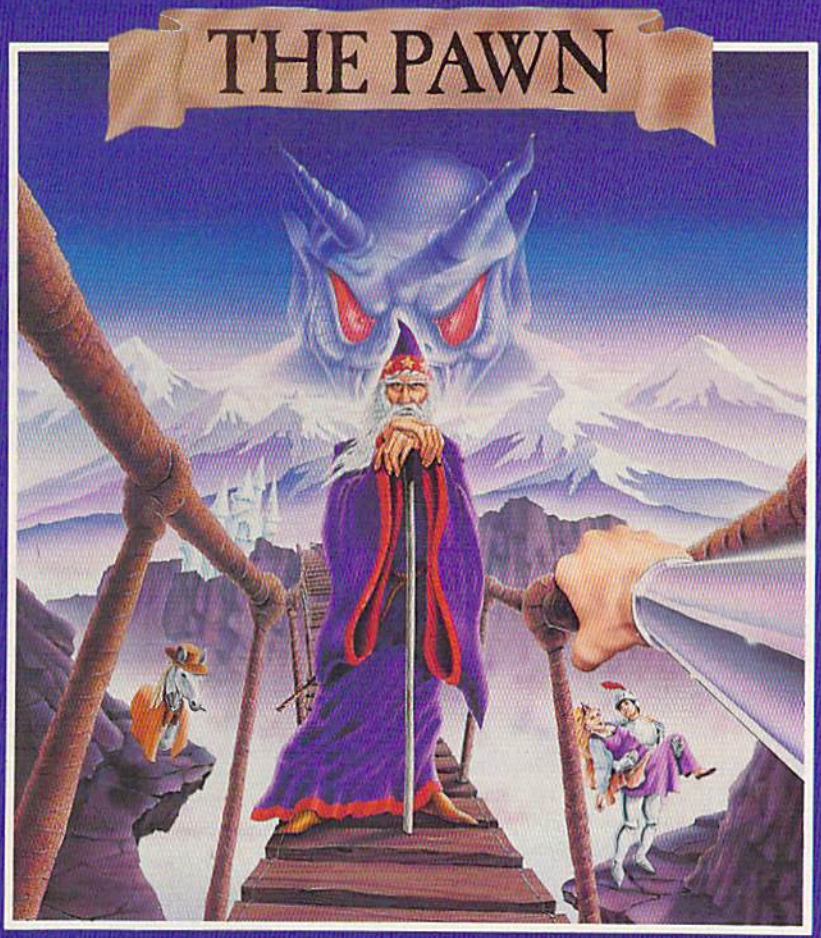
On the plus side, some checkbook programs allow you to arrange your check records by category, such as tax-deductible, utilities, mortgage or rent, and so forth. Then you can print these categories out as needed.

Another useful feature of checkbook programs is that they almost eliminate arithmetic errors in your checkbook record. Of course, this is no advantage if you make errors when typing in the data. These programs are often included in the fancier budget packages as a convenient way of inputting data.

### *Budget Programs*

Home-budget programs usually consist of three parts. The first is for planning—predicting your income and expenses. This requires some

# A rare species of interactive illustrated fiction for the Commodore 64™/128™, Amiga™ and Atari 520st™




AUTHORS

Commodore version available April 1986

RAINBIRD
UK PUBLISHER

FIREBIRD
FIREBIRD LICENSEES
PO BOX 49, RAMSEY, NJ 07446

This illustrated adventure is destined to rival all the classics. Stunning graphics are the icing on the cake – but underneath lies the most advanced text operating system yet developed.

The story is absorbing, humorous, lively, full of intrigue and puzzle, yet subtle enough to appeal to the beginner and the hardened adventurer alike.

'The Pawn' understands **plain English,** it knows the size, volume and weight of the game objects, their texture, and their magical properties (in fact the program stores 135 pieces of information for each object).

The game is **truly** interactive, each character in the plot has a personality (even the animals!) and will respond intelligently to conversation...

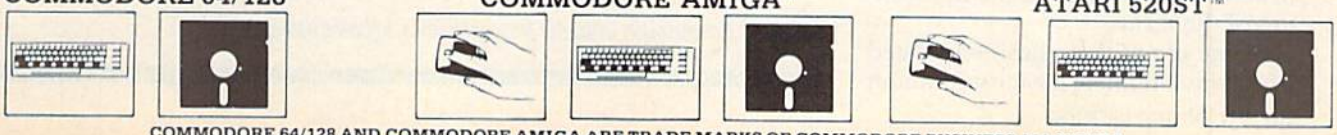
'The Pawn' and further adventures will be available for all leading personal computers.

Guaranteed to make a major impact on the market.

FIREBIRD HOTLINE ☎ 201 934 7373

Circle 104 on Reader Service card.

COMMODORE 64/128™ COMMODORE AMIGA™ ATARI 520ST™



COMMODORE 64/128 AND COMMODORE AMIGA ARE TRADE MARKS OF COMMODORE BUSINESS MACHINES
ATARI 520ST IS A TRADE MARK OF THE ATARI CORPORATION

work on your part, but most programs help by providing standard expense categories that you can add to or delete as your lifestyle dictates.

The second part of the program is for recording actual income and expenses as they occur. It's important to input your data regularly here, because if you lag behind, you may get discouraged and give up the whole project.

The third part of a budget program is for reviewing your financial situation and printing out reports. As you use this section, your spending patterns and areas where you can save money will become apparent. You'll be better able to anticipate seasonal bills and to fine-tune your budget as you see where expenses and income vary from your estimates. Most of these programs let you print out reports in tabular or graphic (usually bar-chart) form.

*Financial-analysis packages can range from those limited to the performance of a specific calculation to multi-functional programs arranged in a modular format.*

A budget program is an excellent home use for your computer. After the initial time investment for entering data, regular updates won't take long, and the results will probably be a revelation.

### *Financial-Analysis Programs*

Financial-analysis packages can range from those limited to the performance of a specific calculation to multi-functional programs arranged in a modular format, where each module is a small program in itself. All these packages analyze the time value of money, using the interest rate, principal amount, time period, compounding rate and installment amount as variables. They usually assume you have enough background in accounting to understand the meaning of the terms.

Home use of these business-related programs is limited, the most common

**Cash Command**; Practical Programs, Inc.; PO Box 93104, Milwaukee, WI 53203; 414-278-0829; $59.95. Designed for individuals and small businesses, this program prints checks, maintains a checkbook and creates balance sheets and income statements.

**Compbank-64**; Sunrise Software; Sunrise, FL 33322; 305-748-0775; $19.95. Print checks, store data, track outstanding checks and reconcile accounts with this package.

**The Electric Ledger**; Datamatic Software; 4610 Music St., New Orleans, LA 70122; 504-282-0018; $49.95. Designed for personal and small-business use, this program lets you balance your checking account, record tax deductions, keep track of account deposits and generate monthly totals and year-to-date summaries.

**The Electronic Checkbook**; Timeworks, Inc.; 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200; $24.95. Organize and record checkbook transactions and have your balance automatically figured with this system.

**The Financial Calculator**; H & E Computronics, Inc.; 50 N. Pascack Road, Spring Valley, NY 10977; 914-425-1535; $99.95. This program calculates present value, interest, future value, payments and number of periods.

**Financial Cookbook**; Electronic Arts; 1820 Gateway Drive, San Mateo, CA 94404; 415-571-7171; $40. This product helps you manage your money.

**Financial Partner**; Practical Programs, Inc.; PO Box 93104, Milwaukee, WI 53203; 414-278-0829; $74.95. A bookkeeping program for personal and small-business use; helps balance your checking account, maintain records and organize finances.

**Home Budget Manager**; H & E Computronics, Inc.; 50 N. Pascack Road, Spring Valley, NY 10977; 914-425-1535; $49.95. This manager helps keep track of income and expenses.

**Home Finance Manager**; Cardinal Software; 13636 Jefferson Davis Highway, Woodbridge, VA 22191; 703-491-6494; $49.95. Maintain home records, store over 200 transactions per month, calculate and print out reports with this manager.

**Home Organizer Series**; Batteries Included; 30 Mural St., Richmond Hill, Ontario, Canada L4B 1B5; 416-881-9941; $29.95 ea. This series includes helpful packages such as Checkbook and Home Inventory.

**Hot Accounts**; Computer Ed. Software; 3051 India St., San Diego, CA 92103; 619-295-4145; $64.95. A word processor and a graphics package are also included in this bookkeeping system that tracks charge cards and checkbooks.

**Income Tax Assistant**; H & E Computronics, Inc.; 50 N. Pascack Road, Spring Valley, NY 10977; 914-425-1535; $49.95. Help yourself prepare income tax returns with this assistant.

**Lifeplan**; Lifeware; 2318 Second Ave., Seattle, WA 98121; 206-322-5454; $99.95. Particularly for middle-income families, this program helps manage finances, analyzes results and monitors progress.

**J.K. Lasser's Your Money Manager**; Simon & Schuster Software; One Gulf+Western Plaza, New York, NY 10023; 212-333-5800; $69.95. This program contains on-screen menus with built-in help features; also 28 forms and schedules organized to match the official IRS forms.

**The Money Manager**; Timeworks, Inc.; 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200; $24.95. Enter 16 budget categories on a monthly basis for one year and obtain analyses, comparisons and bar charts.

**Mortgage Calculator**; H & E Computronics, Inc.; 50 N. Pascack Road, Spring Valley, NY 10977; 914-425-1535; $29.95. This program instantly calculates your mortgage payments.

**Mortgage Maker**; Navic Software; PO Box 14727, North Palm Beach, FL 33408; 305-627-4132; $29. This software prints your own amortization tables.

**Personal Accountant**; Softsync, Inc.; 162 Madison Ave., New York, NY 10016; 212-685-2080; $34.95. This home finance manager generates trial balances and expense reports to keep your finances in order.

**Personal Inventory, Personal Accountant** and **Personal Time Manager**; Cardco, Inc.; 300 S. Topeka, Wichita, KS 67202; 316-267-3807; $39.95. Contains a budgeting tool, a record of net worth and an appointment scheduler.

**Table 1.** *Commercially available personal-finance software packages.*

**Personal Portfolio Manager**; Abacus Software; 2201 Kalamazoo SE, PO Box 7211, Grand Rapids, MI 49510; 616-241-5510; $39.95. If you need to organize your portfolio, PPM helps you do it.

**Portfolio Manager—Options Analysis**; Basic Byte, Inc.; PO Box 924, Southfield, MI 48037; 313-540-0655; $79.95. Gives you stock-option record-keeping and fair market value analysis.

**Portfolio Manager—Stock Management, Vol. 1**; Basic Byte, Inc.; PO Box 924, Southfield, MI 48037; 313-540-0655; $79.95. Invest in the stock market and obtain gain/loss reports, dividend and portfolio value updates with this package.

**64-Accounting**; Software Design, Inc.; 1945 Mitchell Ave., PO Box 570, Waterloo, IA 50704; 800-553-0002; $69.95. This system is designed for personal or small business accounting: financial statements, trial balances, check writing and reconciliation and statement printing.

**Stock Broker**; Acorn of Indiana; 2721 Ohio St., Michigan City, IN 46360; 219-879-2284; $39.95. Your Broker can print out bar graphs and record up to 144 stocks on a disk.

**StockTrender**; J.B. Horton Company; PO Box 2426, Bethlehem, PA 18017; 215-932-9191; $75. This package will store up to 100 stocks or mutuals, make calculations and show annual yields.

**Superbase 128**; Progressive Peripherals & Software; 464 Kalamath St., Denver, CO 80204; 303-825-4144; $99.95. Here is a database program, standard for the C-64, now available for the C-128.

**Swiftcalc 64/128**; Timeworks, Inc.; 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200; $49.95. This is an easy-to-use spreadsheet for home use or a small business.

**Swiftax**; Timeworks, Inc.; 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200; $49.95. Guides you through the tax preparation process; checks alternatives, prints directly onto tax forms and prints amortization schedules.

**Sylvia Porter's Personal Finance Series: Your Personal Finance Planner**; Timeworks, Inc.; 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200; $49.95. This program helps you determine the best financial moves for you and your family.

**Sylvia Porter's Personal Finance Series: Your Personal Investment Manager**; Timeworks, Inc.; 444 Lake Cook Road, Deerfield, IL 60015; 312-948-9200; $69.95. This program helps manage your investment transactions, track portfolios, monitor retirement investments and gains and losses.

**Tax Command—Planner**; Practical Programs, Inc.; PO Box 93104, Milwaukee, WI 53203; 414-278-0829; $49.95. This planner is capable of comparing up to six different tax strategies for periods of up to five years.

**Tax Command—Professional**; Practical Programs, Inc.; PO Box 93104, Milwaukee, WI 53203; 414-278-0829; $49.95. This is a menu-driven computation program for tax forms and schedules.

**TaxWare**; Skyles Electric Works; 231E S. Whisman Road, Mountain View, CA 94041; 415-965-1735; $49.95. Stay up-to-date with this year-round record-keeping and tax-preparation system: handles itemized deductions, income averaging, dividends, stocks and more.

**Vizastar 64/128**; Solid State Software; 1125 E. Hillsdale Blvd., Suite 104, Foster City, CA 94404; 415-341-5606; $119.97. Use this integrated spreadsheet, database and graphics program on your C-64 or C-128.

**The Works!**; Grolier Electronic Publishing; 95 Madison Ave., New York, NY 10016; 212-696-9750; $49.95. This C-64 program contains individual finance modules like Stock Portfolio and Finance Record Keeper, among other productivity applications.

**Your Personal Accountant**; TriMicro; 14072 Stratton Way, Santa Ana, CA 92705; 714-832-6707; $19.95. This program's menus help you define budget and expense categories and bank accounts.

**Your Personal Net Worth**; Scarborough Systems, Inc.; 55 S. Broadway, Tarrytown, NY 10591; 914-332-4545; $49.95. This program helps you organize and improve your finances, including budgets and investments.

application being to figure payments for a mortgage or other installment loan. However, if you have the knowledge, you may want to use them for figuring annuities, retirement benefits or investment strategies.

Financial-analysis programs do not require much data input for meaningful results. I have to type in only about five values to produce a printout of a mortgage-repayment schedule. Most of these programs will print out your input data along with the report.

### *Investment Programs*

If you have money in stocks, bonds, mutual funds or an IRA account, an investment program will help you manage your portfolio. It will keep track of what you bought, when you bought it and how much you paid, and when you sold it and how much you received. It will calculate your profits and losses, broker commissions and tax liabilities and generally give you a picture of where your investments stand at any time. Some of these programs chart cyclical stocks and predict their future swings, or develop investment strategies based on risk factors, your tax bracket and other information.

*My income tax program is my favorite. It does all the calculations and prompts me for data it needs for filling out the forms.*

Probably the best home application for investment programs is record-keeping, especially if you make a lot of transactions during the year. It's also fun to play "what-if" with an investment program, imaginary money and real market data. You can learn a few things about market behavior this way.

### *Income-Tax Programs*

My income-tax program is my favorite. It does all the calculations and prompts me for data it needs for filling out the forms. It also prints my

# GET YOUR MONEY'S WORTH

## "EACH MONTH. . . THERE HAVE BEEN MORE AND MORE USEFUL TIPS, UTILITIES AND INFORMATION. . . I'VE ALREADY GOTTEN MY MONEY'S WORTH OUT OF THE FIRST FOUR ISSUES. THANKS!"

Larry B. Hlavsa. . . MN

### INCREASED VALUE

Each month, more and more Commodore users find that *RUN* not only repays the low subscription cost, but actually increases the value of their computer, issue after issue!

And why not? When every issue of *RUN* is packed with valuable programming tips, utilities and proven ideas that make computing on your C-64 and C-128 easier, more productive, and more fun.

The Commodore C-128/C-64 Home Computing Guide
RUN
DISCOVER GEOS:
CREATE A FRIENDLIER AND MORE POWERFUL C-64
THREE SUPER UTILITIES:
C-128 CHARACTER GENERATOR
QUICK MERGE 64
C-64 EASY DISK-FILE CONVERSION
PLUS:
IN SEARCH OF THE PERFECT PRINTER, PART II
Also Inside: Special Section On Education

### MANY EXCLUSIVE FEATURES

In addition, *RUN*'s **Telecommunicating Workshop** brings you all the latest developments in the fast-growing sphere of telecommunications for your Commodore, with special emphasis on efficient, error-free use. In the education area, *RUN*'s exclusive **Resource Center** shows you the many new and exciting ways your Commodore can be used for education both at home and in the classroom.

And when it comes to programs, no one brings you a wider range of helpful projects and programs you can put to use immediately for education, home and business applications, managing your home finances. . . or just to take "time out" with a delightful, imaginative game.

► Better yet, ☎ **CALL TOLL FREE 1-800-258-5473** (In NH, dial 1-924-9471) and get *RUN* working for you even sooner!

### SAVE TIME • SAVE MONEY!

If *RUN*'s expert product reviews help you avoid even one mistaken purchase, you'll again save yourself enough to repay your subscription, not to mention time and hassle. And when you're ready to buy, you won't find a better marketplace than in the pages of *RUN*.

### SAVE 44% RIGHT NOW!

Speaking of savings, you can start those savings right now, by entering your *RUN* subscription at a full **44% off** the cover price! Just complete the coupon below or mail the postpaid card opposite. Be assured of getting every issue of *RUN*, every month to add value and enjoyment to every hour you spend with your computer.

**YES, I want to start saving and add to my computing enjoyment every month!** Send me the next 12 issues of ***RUN*** at the low Introductory Rate of just **$19.97**—a full **44%** off the newsstand price!

☐ Payment enclosed ☐ Bill me **369B5**

Name (Please Print)

Address

City State Zip

Canada and Mexico, $22.97. Foreign surface $39.97, 1 year only US funds drawn on US banks Foreign airmail, $74.97. Please allow 6 to 8 weeks for delivery.

**RUN • Box 954 • Farmingdale, NY 11737-9854**

For C-64 and C-128 in all modes:

Toronto Pet Users Group (TPUG)
Bruce Hamsen, General Manager
101 Duncan Mill Road
Suite G7
Don Mills, Ontario
Canada M3B 1Z3
416-445-4524

For a lengthy list of local Commodore user's groups see *RUN*'s 1986 Special Issue.*

For C-128 in CP/M mode:

SIG/M (Special Interest Group for Microcomputers)
PO Box 97
Iselin, NJ 08830

FOG (First Osborne Group)
PO Box 3474
Daly City, CA 94015
415-755-4140

Ralph S. Lees, Jr.
Poseidon Electronics
103 Waverly Place
New York, NY 10011
212-777-9515

For more detailed information on sources of public domain CP/M software, see the January 1986 issue of *RUN*.* A list of FOG bulletin-board phone numbers and instructions on using Remote CP/M (RCP/M) bulletin boards is included.

On-line networks:

QuantumLink
Quantum Computer Services
8620 Westwood Center Drive
Vienna, VA 22180
800-392-8200
Within Virginia: 703-448-8700

Delphi
General Videotex Corp.
3 Blackstone St.
Cambridge, MA 02139
800-544-4005
Within Massachusetts: 617-491-3393

CompuServe
5000 Arlington Centre Blvd.
Columbus, OH 43220
800-848-8199
Within Ohio: 614-457-8650

For a longer list of on-line services, see *RUN*'s 1986 Special Issue.*

*RUN* articles:

"Money Manager," by Robert W. Baker, in the March 1985 issue.* This program does investment and loan calculations.

"Finance Aid," a program on the 1985 ReRUN Productivity Pack disk. Refer to the ReRun ad in this issue for ordering instructions. The page number of the ad appears in the List of Advertisers, on the last page of the issue, under RUN.

"Graph Maker 64," by Doug Smoak, in the April 1985 issue.* This program creates, saves and prints bar graphs.

* Back issues of *RUN* are available for $3.50, plus $1.00 postage and handling, from *RUN*, Back Issue Orders, 80 Pine St., Peterborough, NH 03458.

**Table 2.** *Sources of public domain personal-finance software.*

necessary 1040 forms and schedules and the back-up documentation for my own files. The only thing it doesn't do is round up the shoeboxes.

As I use the program, I see how every one of my financial transactions affects my tax liability. What's the tax difference if I start an IRA? The answer is only few keystrokes away.

If you submit the long 1040 form as I do, there's no better way to do your taxes. And even if you have an accountant do the job for you, you may want to consider a tax-preparation program to organize the supporting data.

### *A Note About Spreadsheets*

Almost any of the chores that personal-finance programs perform can be duplicated by spreadsheet templates. These are blank financial formats of various kinds that you can hang your own numbers on. You type a template into your spreadsheet program and then save it to disk. To use it, you load it back into the spreadsheet and fill in the blanks with your numbers. Then the program calculates the answers, using the template formulas and your numbers.

I've seen template forms for checkbooks, budget planning, financial analysis, investments and income-tax preparation, and there are books available containing many standard templates.

One of their drawbacks is that you need some financial background to use them. On the other hand, the full-featured personal-finance programs lead you by the hand, so you don't need as much experience.

A final caution: Because of the prodigious data input required with personal-finance programs, make sure the program you choose will satisfy all your requirements, both now and in the foreseeable future. You won't want to type in all the data again later. Talk to other users, read reviews in magazines, check the technical specifications in the literature accompanying the package and try to get a hands-on demonstration from your dealer or another user.

I know all you grasshoppers haven't become ants by reading this article. However, you should consider getting a personal-finance program. Some day, when you feel like engaging in a little ant-like activity, you can type in the preliminary data, then keep the program handy for updates. Once it's up and running, you won't want to give it up—and it may even be fun! R

*Address all author correspondence to Joseph J. Shaughnessy, c/o Reynolds, Smith & Hills, PO Box 4850, Jacksonville, FL 32201.*

# THE LOAN ARRANGER

*What's that loan really going to cost you in the long run? This program will provide the answer.*

*By JAAP KROES*

How would you like an amortization schedule of each outstanding loan you have, including the mortgage? By having such a schedule, you can easily calculate for tax-deduction purposes the amount of interest you paid during the preceding year.

The Loan Calculator and Amortization program (Listing 1) for the C-64 and C-128 will do all that for you. It's easy to use, requiring only input to the questions asked on the screen. And if you want a hard copy of the amortization schedule, just answer *Y* when prompted for it, and you'll get a neat, easy-to-read printout.

### *Using the Program*

Type in Listing 1 and save it to disk or tape before running it. After you run it, a menu will appear.

Option 1, Monthly Payments, consists of three questions to determine your monthly payments. You'll be prompted to enter your loan principal, the interest rate and the number of months in the repayment schedule. This is a handy feature, since you may wish to see what effect different interest rates would have on your monthly payment.

Option 2, Loan Balance, begins by prompting you to enter the amount of your current loan. It then asks you for the amount of your monthly payments and how many you've made, and finally for the interest rate. The remaining balance is instantly displayed, and you are asked if you want to run another. An *N* answer returns you to the main menu.

The most interesting part of the program is option 3, Amortization, which will list the figures to your screen or printer.

Again you are asked to input the amount of the loan, the interest rate and the duration of the loan in months. You are then asked if you want a hard copy. If you answer *N*, the amortization schedule of your loan is printed to the screen. The top three lines of the screen consist of the column headings. The figures scroll through the rest of the normal screen.

After the program loops through the formulas—one loop per month—you are informed of the total amount of your payments and the cost of the loan. The cost of the loan is nothing more than the total of payments minus the principal amount of the loan.

Please note that on occasion, when working with large loans, the amounts may be off by a few cents. This is due to the method of rounding, which doesn't always go to the nearest penny. However, the program has been exceptionally accurate in most situations.

If you answer *Y* when asked if you want a hard copy, you'll get a printout of the amortization schedule. The routine should work fine with your Commodore printer as well as with third-party printers. Tabbing is accomplished in a rather crude but effective way, using

```
PRINT#4,""TAB(n)X$
```

where *n* is the number of spaces to tab.

Page advance is automatic by means of counter K. When this counter reaches 42 lines, the program prints a message at the bottom of the page and increases the page number by 1. A form-feed is sent to the printer, and the counter K is reset to 0. The next page number appears at the top of the next page and is followed by the column headings.

When you wish to exit the program, select option 4. A final message is printed to the screen, and the program ends.

All in all, you should find the program to be a very accurate and useful addition to your financial program library. And it should help you make some informed decisions about borrowing money prior to your actual shopping. The amortization schedule makes tax time a little easier, since you don't have to rely on lenders to provide you with interest-paid information. R

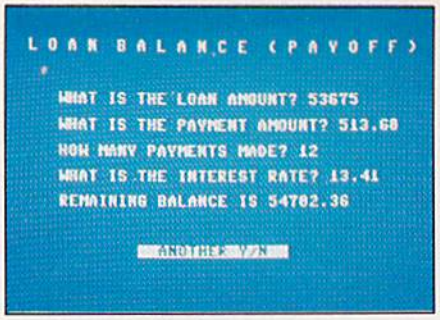
*Address all author correspondence to Jaap Kroes, PO Box 66, Pella, IA 50219.*

**RUN** It Right

*C-64; C-128 (in 40-column mode)*
*Printer optional*

*Photograph by Edward Judice*

UNCLE SAM'S
SAVINGS BANK
CASH STORE REGISTER


LOAN BALANCE (PAYOFF)
WHAT IS THE LOAN AMOUNT? 53675
WHAT IS THE PAYMENT AMOUNT? 513.68
HOW MANY PAYMENTS MADE? 12
WHAT IS THE INTEREST RATE? 13.41
REMAINING BALANCE IS 54782.36
ANOTHER Y/N

**Listing 1.** *Loan Calculator program.*

```
10 REM 64/128 LOAN AMORTIZATION
   PROGRAM                  :REM*154
20 REM BY JAAP KROES        :REM*156
30 REM 03/86                :REM*34
40 PRINT"{SHFT CLR}":POKE53280,0
   :POKE53281,0:POKE646,7:REM*28
50 A$="64/128 LOAN AMORTIZATION
   PROGRAM"                 :REM*208
60 GOSUB90:A$="BY{2 SPACEs}JAAP{
   2 SPACEs}KROES"          :REM*92
70 GOSUB90:A$=" BOX 66,{2 SPACEs
   }PELLA, IA. 50219"       :REM*188
80 GOSUB90:FORT=1TO1000:NEXTT:GO
   TO140                    :REM*142
90 A%=LEN(A$):Y=A%          :REM*158
100 PRINT"{2 CRSR DNs}":FORX=1TO
    A%                      :REM*248
110 PRINTTAB((39-A%)/2)MID$(A$,Y
    ,X)"{CRSR LF}{CRSR UP}"
                            :REM*36
120 Y=Y-1:FORD=1TO25:NEXTD:NEXTX
    :RETURN                 :REM*188
140 PRINT"{SHFT CLR}"       :REM*130
150 PRINTSPC(12)"{2 CRSR DNs}L O
     A N{2 SPACEs}M E N U"
                            :REM*76
160 PRINTSPC(11)"{2 CRSR DNs}1)
    MONTHLY PAYMENT"        :REM*122
170 PRINTSPC(11)"{CRSR DN}2) LOA
    N BALANCE (PAYOFF)"     :REM*218
180 PRINTSPC(11)"{CRSR DN}3) AMO
    RTIZE A LOAN":PRINTSPC(11)"{
    CRSR DN}4) END PROGRAM"
                            :REM*186
190 GETA$:IFA$=""THEN190:REM*132
200 IFA$<"1"ORA$>"4"THEN190
                            :REM*116
210 ONVAL(A$)GOTO220,350,500,840
                            :REM*28
220 PRINT"{SHFT CLR}{2 CRSR DNs}
    {5 SPACEs}M O N T H L Y{2 SP
    ACEs}P A Y M E N T":PRINT
                            :REM*8
230 INPUT"{2 CRSR DNs}{6 SPACEs}
    1) LOAN PRINCIPLE ";LP
                            :REM*96
240 INPUT"{CRSR DN}{6 SPACEs}2)
    LOAN INTEREST{2 SPACEs)";LI
                            :REM*96
250 IR=LI/12                :REM*38
260 INPUT"{CRSR DN}{6 SPACEs}3)
    LOAN DURATION (MONTHS)";LD:P
    RINT                    :REM*183
270 X=(1-(1+IR/100){UP ARROW}-LD
    )/(IR/100)              :REM*21
280 MP=LP/X:MR=INT(MP/0.01)*0.01
                            :REM*21
290 MR$=STR$(MR+.001):MR$=MID$(M
    R$,2,(LEN(MR$)-2))      :REM*137
300 PRINT"{CRSR DN}{6 SPACEs}4)
    MONTHLY PAYMENT = $";MR
                            :REM*185
310 PRINT"{2 CRSR DNs}{11 SPACEs
    }{CTRL 9}{3 SPACEs}ANOTHER{3
     SPACEs}Y/N{3 SPACEs}{CTRL 0
    }"                      :REM*151
320 GETA$:IFA$<>"Y"ANDA$<>"N"THE
    N320                    :REM*73
330 IFA$="N"THENRUN140      :REM*59
340 IFA$="Y"THENRUN220      :REM*177
350 PRINT"{SHFT CLR}{2 CRSR DNs}
     L O A N{2 SPACEs}B A L A N
    C E{2 SPACEs}( P A Y O F{SHF
    T SPACE}F{SHFT SPACE})":PRIN
    T                       :REM*165
360 INPUT"{CRSR DN}{4 SPACEs}WHA
    T IS THE LOAN AMOUNT";PV
                            :REM*249
370 INPUT"{CRSR DN}{4 SPACEs}WHA
    T IS THE PAYMENT AMOUNT";PMT
                            :REM*145
380 INPUT"{CRSR DN}{4 SPACEs}HOW
     MANY PAYMENTS MADE";N
                            :REM*251
390 INPUT"{CRSR DN}{4 SPACEs}WHA
    T IS THE INTEREST RATE";I
                            :REM*7
400 RI=I/12                 :REM*177
410 X=(RI/100)+1:Y=X{UP ARROW}N:
    Z=Y*PV                  :REM*169
420 XX=X*PMT:ZZ=Y-1:YY=RI/100:ZX
    =ZZ/YY:ZY=XX*ZX:BA=Z-ZY
                            :REM*221
430 BL=INT(BA/0.01)*0.01:REM*153
440 BL$=STR$(BL+.001):BL$=MID$(B
    L$,2,(LEN(BL$)-2))      :REM*219
```

→


THEY'RE BACK!!

NEW!! VOL. 2!

"If there's something strange on any track, ZAP it with our POWER-PAK!"

"If you can't get a copy to work at all, then who you gonna call??? DISKBUSTERS™!!!"

"If there's a disk you can't crack, you'll need our Super POWER-PAK!"

DISKBUSTERS™ 2

THE SUPER NEW COPIER FOR C128 & C64!

For SUPER "Paranormal" Copying!

Still ONLY $29.95!

CALL 805-569-1644 Operator 7

Ask about DiskNotcher & SPECIAL COPY-PACK!

HAS SOMETHING STRANGE BEEN PREVENTING YOU FROM COPYING YOUR SOFTWARE? THEN DISKBUSTERS2™ IS THE COPIER YOU'VE BEEN WAITING FOR!!!

You'll be amazed when you load up **DISKBUSTERS2™** and see it copy software that nobody else can! **NEW POWER-PAK** Parameters ZAP through over 100 NEW protection schemes! **DISKBUSTERS2™** copies **HUNDREDS** of software titles in just 2-3 minutes! A **DISKBUSTERS2™** copy even loads some software many times FASTER! And for software yet to be released. . .the **NEW DISKBUSTERS2™** GCR Nibble Buster is so good it's scary!!! Specially designed for the C128, C64, SX-64, with 1541/1571 drive. C128 owners . . . just put the **DISKBUSTERS2™** disk in your drive and Power-Up, it loads automatically!

DISKBUSTERS2™ COPIES NEW C128 SOFTWARE USING 1571 DRIVE!

WE AIN'T AFRAID OF NO DISKS!

Order by phone VISA/MASTERCARD/COD or send check/money order to "db software" & include ship charges: 3.50 ship USA, UPS AIR 5.50, ship CANADA 7.50. CA addresses add 6% tax.

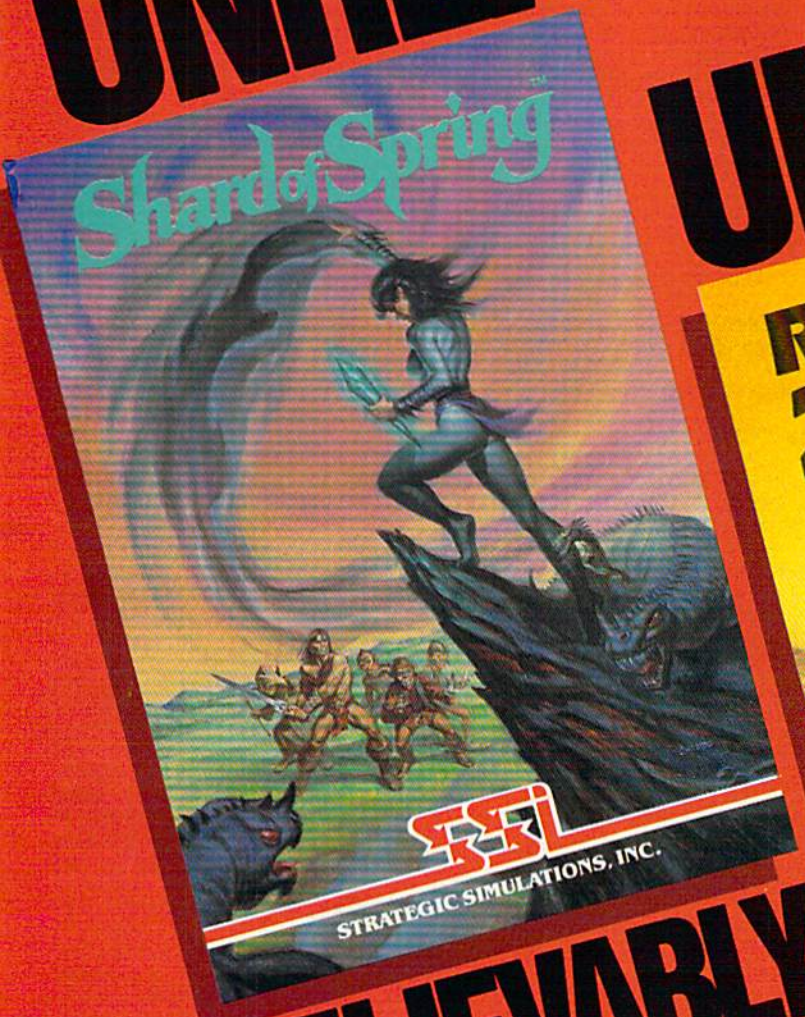
db software * box 31169 * Goleta * CA * 93130

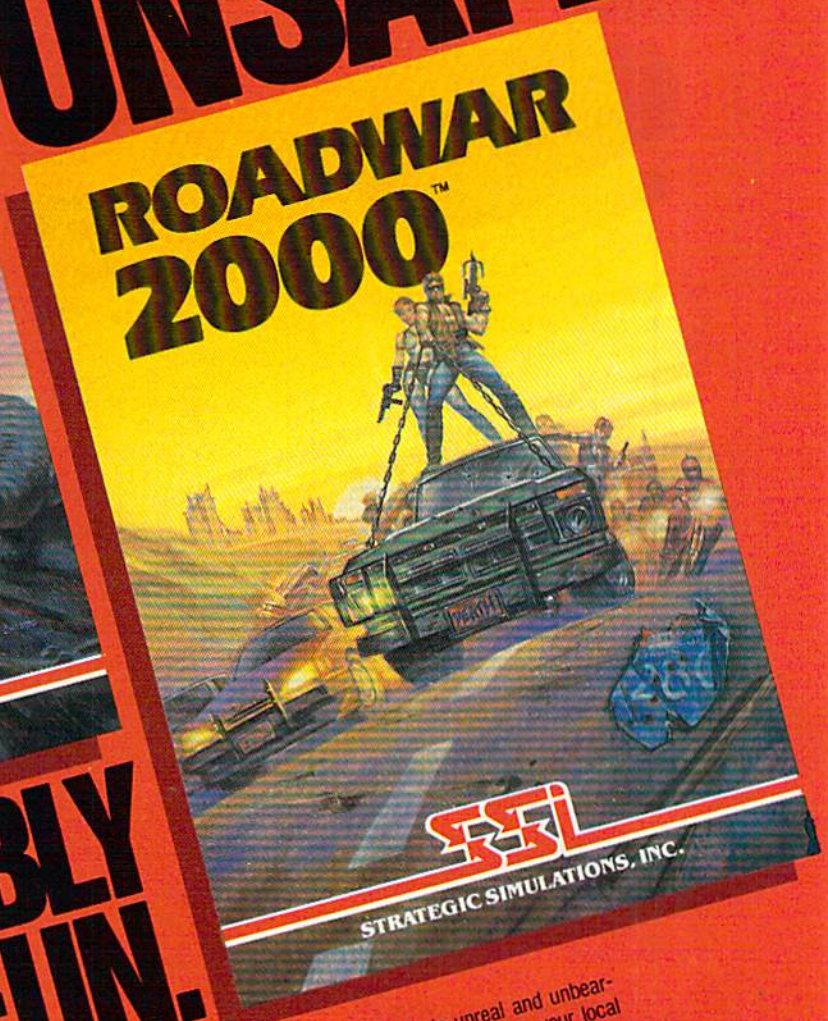
Circle 157 on Reader Service card.

Circle 25 on Reader Service card.

# UNREAL.

# UNSAFE.




# UNBELIEVABLY FUN.

SHARD OF SPRING™, the new multiple-character role-playing game from SSI, promises an adventure unbounded by the mundane constraints of reality. It is set in a world where magic overrides the laws of physics, where monsters, gnomes and elves outnumber mere humans. Your quest is to recover the wondrous Shard, the giver of eternal Springtime. This precious crystal has been stolen by a demonic sorceress. Assemble five characters and endow them with different combinations of speed, intellect, strength, endurance, and warrior/wizardry skills. Then guide them wisely through evil dungeons and treacherous lands as they search to regain the Shard.

This fantasy game boasts a unique feature: During combat, the tactical screen is an exact zoom-in shot of where you are on the overall map.

**On disk for 64K Apple®II series and C-64™. IBM® version coming soon.**

In ROADWAR 2000™, you get to break a new set of rules, namely the law of safe driving. In the year 2000, bacteriological warfare has ripped apart the very fabric of American civilization. Cities have turned into gangland prizes; the highways, into battlefields. As the patriotic leader of a road gang, you are asked by what is left of the Federal Government to locate eight scientists and return them to a secret underground lab to develop a cure for the dreaded disease. As you crisscross the nation's highways on your desperate mission, you must constantly battle mutants, cannibals, and rival road gangs for new recruits, vehicles, supplies, food, gas, guns, ammunition, and medicine. In this brutal land, they are more precious than gold.

**On disk for 48K Apple®II series and C-64™.**

For excitement that is unreal and unbearable, check out these games at your local computer/software or game store today!

If there are no convenient stores near you, VISA & M/C card holders can order these $39.95 games directly by calling **toll-free 800-443-0100, x335.** To order by mail, send your check to: STRATEGIC SIMULATIONS, INC., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (California residents, add 7% sales tax.) Please specify computer format and add $2.00 for shipping and handling.

All our games carry a "14-day satisfaction or your money back" guarantee.

**WRITE FOR A FREE COLOR CATALOG OF ALL OUR GAMES TODAY.**

Apple, Commodore, and IBM are trademarks of Apple Computer, Inc., Commodore Electronics, Ltd., and International Business Machines Corp., respectively.

SSI

©1986 by Strategic Simulations, Inc. All rights reserved.

Circle 274 on Reader Service card.

# MAC INKER™

Re-ink Any Fabric Ribbon
**Automatically for less than 5 cents.**

**Dedicated Units** Start at **$54.95**

**Universal Cartridge MAC INKER** **$68.50**

**Universal Spool MAC INKER** **$66.95**

shipping $3.00

Lubricated, Dot Matrix Ink $3.00, bottle available in black/brown/red/green/yellow/purple/orange/gold and silver.

**Over 50,000 MAC INKER(s) in the field.**

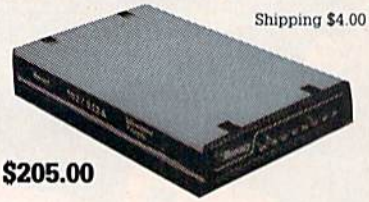
**Over 7500 printers supported.**

# MERCURY MODEM

**Really** 100% Hayes* Compatible.

- 300/1200 baud.
- audio monitor/front panel lights.
- 18 months warranty.

Shipping $4.00



**$205.00**

*Hayes is a trademark of Hayes Microproducts.

# DATA SWITCHES

All types, all lines switched, all metal, heavy duty switch, elegant design, best value for money.

**2 Ports Parallel or Serial** **$ 75.00**

**4 Ports Parallel or Serial** **$150.00**

**2 Computers/2 Printers Parallel or Serial** **$150.00**

We have cables too. Please inquire or specify at time of order.

**Order Toll Free.**
Call or write for free brochure.
**1-800-547-3303**
In Oregon 503-297-2321 (24 hours line)

# Computer Friends®

6415 SW Canyon Ct., #10, Portland, OR 97221,
telex 4949559
**Dealer inquiries welcome.**

*Listing 1 continued.*

```
45Ø PRINT"{CRSR DN}{4 SPACEs}REM
    AINING BALANCE IS ";BL$
                              :REM*9
46Ø PRINT"{3 CRSR DNs}{12 SPACEs
    }{CTRL 9}{2 SPACEs}ANOTHER Y
    /N{2 SPACEs}{CTRL Ø}"
                              :REM*219
47Ø GETA$:IFA$<>"Y"ANDA$<>"N"THE
    N47Ø                      :REM*1Ø1
48Ø IFA$="N"THENRUN14Ø    :REM*2Ø9
49Ø IFA$="Y"THENRUN35Ø    :REM*127
5ØØ PRINT"{SHFT CLR}"     :REM*235
51Ø PRINTSPC(3)"{3 CRSR DNs}L O
    A N{2 SPACEs}A M O R T I Z{S
    HFT SPACE}A T I O N":REM*229
52Ø INPUT"{2 CRSR DNs}{5 SPACEs}
    AMOUNT OF LOAN---$";A:I=A
                              :REM*2
53Ø INPUT"{CRSR DN}{5 SPACEs}INT
    EREST RATE IN %";B    :REM*62
54Ø INPUT"{CRSR DN}{5 SPACEs}DUR
    ATION OF LOAN IN MONTHS";C
                              :REM*58
55Ø PRINT"{2 CRSR DNs}{4 SPACEs}
    DO YOU WANT HARD COPY (Y/N)"
                              :REM*124
56Ø GETZ$:IFZ$<>"Y"ANDZ$<>"N"THE
    N56Ø                      :REM*34
57Ø Z=Ø:IFZ$="Y"THENZ=1:GOTO59Ø
                              :REM*138
58Ø PRINT"{SHFT CLR}":PRINT" #{4
     SPACEs}PMT{7 SPACEs}INT{5 S
    PACEs}PRIN{7 SPACEs}BAL{2 SP
    ACEs}"                    :REM*8
59Ø PRINT:Y=1             :REM*192
6ØØ D=A/((1-(1+B/12ØØ){UP ARROW
    }-C)/(B/12ØØ)))           :REM*76
61Ø E=B/12ØØ*A:F=D-E:G=A-F:GOSUB
    62Ø:GOTO72Ø               :REM*44
62Ø DD=INT(D/Ø.Ø1)*Ø.Ø1  :REM*2ØØ
63Ø EE=INT(E/Ø.Ø1)*Ø.Ø1   :REM*94
64Ø FF=INT(F/Ø.Ø1)*Ø.Ø1  :REM*246
65Ø GG=INT(G/Ø.Ø1)*Ø.Ø1  :REM*14Ø
66Ø DD$=STR$(DD+.ØØ1):DD$=MID$(D
    D$,2,(LEN(DD$)-2))    :REM*64
67Ø EE$=STR$(EE+.ØØ1):EE$=MID$(E
    E$,2,(LEN(EE$)-2))    :REM*23Ø
68Ø IFEE<1THENEE$="Ø"+STR$(EE+.Ø
    Ø1):EE$=MID$(EE$,2,(LEN(EE$)
    -2))                  :REM*158
69Ø FF$=STR$(FF+.ØØ1):FF$=MID$(F
    F$,2,(LEN(FF$)-2))    :REM*146
7ØØ GG$=STR$(GG+.ØØ1):GG$=MID$(G
    G$,2,(LEN(GG$)-2)):IFGG<=ØTH
    ENGG$="Ø.ØØ"          :REM*144
71Ø RETURN                :REM*2
72Ø IFZ=1THENPRINT"{SHFT CLR}":P
    RINTTAB(13)"{7 CRSR DNs}{CTR
    L 9} PLEASE{2 SPACEs}WAIT {C
    TRL Ø}"               :REM*68
725 IFZ=1THENPRINTTAB(13)"{CTRL
    9}{3 SPACEs}PRINTING{3 SPACE
    s}{CTRL Ø}":GOTO88Ø   :REM*229
73Ø PRINTY:PRINTTAB(11-LEN(DD$))
    "{CRSR UP}"DD$:PRINTTAB(2Ø-L
    EN(EE$))"{CRSR UP}"EE$
                          :REM*246
74Ø PRINTTAB(28-LEN(FF$))"{CRSR
    UP}"FF$:PRINTTAB(39-LEN(GG$)
    )"{CRSR UP}"GG$       :REM*168
75Ø C=C-1:A=G:Y=Y+1       :REM*1Ø
76Ø IFC>ØTHEN6ØØ          :REM*25Ø
765 GOSUB77Ø:GOTO8ØØ      :REM*19
77Ø T=VAL(DD$):TT=T*(Y-1):TC=TT-
    I:CT=INT(TC/Ø.Ø1)*Ø.Ø1:TL=IN
    T(TT/Ø.Ø1)*Ø.Ø1        :REM*235
78Ø TT$=STR$(TL+.ØØ1):TT$=MID$(T
    T$,2,(LEN(TT$)-2))    :REM*65
79Ø TC$=STR$(CT+.ØØ1):TC$=MID$(T
    C$,2,(LEN(TC$)-2)):RETURN
                          :REM*165
8ØØ PRINT"{CRSR DN}TOTAL PAYMENT
    S = "TT$:PRINT"{CRSR DN}TOTA
    L COST{5 SPACEs}={2 SPACEs}"
    TC$                   :REM*45
81Ø IFC=ØTHENPRINT"{CRSR DN}{11
    SPACEs}{CTRL 9}{3 SPACEs}ANO
    THER Y/N{3 SPACEs}{CTRL Ø}"
                          :REM*27
82Ø GETA$:IFA$<>"Y"ANDA$<>"N"THE
    N82Ø                  :REM*193
83Ø IFA$="Y"THENRUN5ØØ    :REM*149
84Ø PRINT"{CRSR UP}{1Ø SPACEs}{C
    TRL 9}{3 SPACEs}END PROGRAM
    Y/N{3 SPACEs}{CTRL Ø} "
                          :REM*1Ø3
85Ø GETA$:IFA$<>"Y"ANDA$<>"N"THE
    N85Ø                  :REM*227
86Ø IFA$="N"THENRUN14Ø    :REM*79
87Ø IFA$="Y"THENA$="* * *{2 SPAC
    Es}T{SHFT SPACE}H{SHFT SPACE
    }A{SHFT SPACE}N K{2 SPACEs}Y
     O U{2 SHFT SPACEs}* * *":PR
    INT"{SHFT CLR}{6 CRSR DNs}":
    GOSUB9Ø               :REM*9
875 PRINT"{CTRL 1}":END   :REM*2
88Ø REM *** PRINTER ROUTINE ***
                          :REM*53
89Ø E$=CHR$(27):H$=CHR$(9)
                          :REM*219
9ØØ OPEN4,4:CMD4          :REM*127
91Ø PRINT                 :REM*247
92Ø PRINT"{19 SPACEs}**** LOAN A
    MORTIZATION SCHEDULE ****"
                          :REM*63
93Ø PRINT                 :REM*11
94Ø PRINT"{11 SPACEs}AMOUNT OF L
    OAN{5 SPACEs}= $"A    :REM*247
95Ø PRINT"{11 SPACEs}INTEREST RA
    TE{6 SPACEs}={2 SPACEs}"B"%"
                          :REM*123
96Ø PRINT"{11 SPACEs}LENGTH OF L
    OAN{5 SPACEs}={2 SPACEs}"C"M
    ONTHS"                :REM*77
97Ø PRINT:K=Ø:P=1:Y=1     :REM*189
98Ø PRINT"{2 SPACEs}PMNT #{8 SPA
    CEs}PMNT{1Ø SPACEs}INTEREST{
    8 SPACEs}PRINCIPAL{6 SPACEs}
    BALANCE"              :REM*1Ø9
99Ø PRINT                 :REM*71
1ØØØ D=A/((1-(1+B/12ØØ){UP ARRO
    W}-C)/(B/12ØØ)))      :REM*221
1Ø1Ø E=B/12ØØ*A:F=D-E:G=A-F:GOSU
    B62Ø                  :REM*229
1Ø2Ø Y$=STR$(Y)           :REM*43
1Ø3Ø PRINT#4,""TAB(5-LEN(Y$))Y$;
                          :REM*212
1Ø4Ø PRINT#4,""TAB(16-LEN(DD$))D
    D$;                   :REM*1Ø6
1Ø5Ø PRINT#4,""TAB(16-LEN(EE$))E
    E$;                   :REM*224
1Ø6Ø PRINT#4,""TAB(16-LEN(FF$))F
    F$;                   :REM*86
1Ø7Ø PRINT#4,""TAB(16-LEN(GG$))G
    G$                    :REM*1ØØ
1Ø8Ø C=C-1:A=G:K=K+1:Y=Y+1
                          :REM*152
1Ø9Ø IFK=42THEN115Ø       :REM*2Ø2
11ØØ IFC>ØTHEN1ØØØ        :REM*14Ø
111Ø GOSUB77Ø:CMD4        :REM*84
112Ø PRINT:PRINT"{2 SPACEs}TOTAL
     PAYMENTS = "TT$      :REM*2ØØ
113Ø PRINT:PRINT"{13 SPACEs}TOTA
    L COST = "TC$         :REM*52
114Ø IFC=ØTHENPRINT#4:CLOSE4:PRI
    NT"{SHFT CLR}{1Ø CRSR DNs}"
    :GOTO81Ø              :REM*176
115Ø CMD4:P=P+1:PRINT:PRINT"{8 S
    PACEs}CONTINUED ON NEXT PAG
    E":K=Ø                :REM*12
1155 FORT=1TO8:PRINTCHR$(1Ø):NEX
    T                     :REM*155
116Ø PRINT"{35 SPACEs}PAGE #"P:P
    RINT:PRINT:PRINT      :REM*17Ø
117Ø PRINT"{2 SPACEs}PMNT #{8 SP
    ACEs}PMNT{1Ø SPACEs}INTERES
    T{8 SPACEs}PRINCIPAL{5 SPAC
    Es}BALANCE"           :REM*94
118Ø PRINT                :REM*6
119Ø GOTO11ØØ             :REM*128
```

end R

# Great Software for Under $7.00...

Now is your chance to build your software library at a *very* reasonable cost! For **ONLY $6.99** you can get software for your Commodore or Apple computer. Choose from entertainment, home management or education titles.

**Save $1.00** on a 10-pack of DS/DD **Blank Diskettes** with any merchandise order over $10.00.

## For the Commodore 64/128

**Entertainment Series**

C-1 Memory Quest
C-2 Sky Fighters
C-3 Atomic Challenger
C-4 Professional Gambler
C-5 The Survival Instinct
C-6 Arcade Action
C-7 Adventure Master
C-8 A PACaLIPS NOW
C-9 Bits, Pieces and Clues
C-10 Board Games 1
C-11 Board Game Challengers
C-12 Chess Champion
C-13 Crazy Corners
C-14 Galactic Empire Builder
C-15 Just Games (With a Twist!)
C-16 Land, Sea & Air Adventures
C-17 Maze Madness!
C-18 Peg Out (The Cribbage Game)
C-19 Star Trek Evolution
C-20 Trivia Quest
C-21 Open—
Golfing Royal St. George's
C-22 Alien
C-23 Bulge—Battle for Antwerp
C-24 Wizard & the Princess
C-25 Ulysses & the Golden Fleece
C-26 Mission Asteroid
C-27 Passport to London
C-28 Passport to Paris

**Home Management**

C-30 Vital Data Keeper
C-31 Wordmaster Senior
C-32 Master Word
C-33 Personal Spreadsheet
C-34 g'BASE, database manager
C-35 My 64—A Computer Tutor
C-36 Commodore 64 Utilities
C-37 Financial Analyzers
C-38 Home and Business Card File
C-39 Home Expense Manager
C-40 Home Finance Organizer 1
C-41 Home Finance Organizer 2
C-42 Home Income Manager
C-43 Home Money Manager
C-44 Home Property Manager
C-46 Personal File Keeper
C-47 Personal Investment Manager
C-48 Family Tree
C-49 Electronic Scheduler
C-50 Pro Financial Organizer
C-51 Recipe Box
C-52 Tax Record Organizer

**Education Series**

C-53 Number Builder
C-54 Number Chaser
C-55 Hide & Seek
C-56 Picture This
C-57 Let's Count
C-58 Time Trucker
C-59 Fancy Face
C-60 Math Manor
C-61 Typing Tutor
C-62 Speed Reader

**Electric Book Co. Education Series**

C-63 Why?
C-64 When?
C-65 The Three Bears
C-66 Gingerbread Man
C-67 Baby Animals
C-68 Hoppy the Curious Kangaroo
C-69 Wild Animals
C-70 Tom Thumb
C-71 I Was a Second Grade Werewolf
C-72 Tough Eddie

## For the Apple II+, IIc, IIe

**Entertainment Series**

A-1 Beginner's Cave, an Adventure
A-2 Cave of the Mind, an Adventure
A-3 River Adventure, an Adventure
A-4 Fore!, Golfing Simulator
A-5 Lady Luck
A-6 Space Adventure
A-7 Classic Games
A-8 Android Invasion
A-9 Championship Gambler
A-10 Chess Champion
A-11 Memory Quest
A-13 Ulysses & the Golden Fleece
A-15 Passport to London
A-16 Passport to Paris

**Home Management**

A-17 The Addresser—Mailing List
A-18 Financial Planner
A-19 General Ledger
A-20 Monthly Budgeter
A-21 Nutrition Monitor
A-22 Securities Portfolio
A-23 Recipe Box
A-24 Database Manager
A-25 Disk Library
A-26 Electronic Calendar
A-27 Electronic Phone Book
A-28 Family Tree
A-29 Personal Spreadsheet
A-30 JWriter, Word Processor
A-31 Utility Master
A-32 Vital Data Keeper
A-33 Typing Tutor
A-34 Tax Record Organizer
A-35 Checkbook Balancer
A-36 JBase

**Education Series**

A-37 Mr. Math
A-38 Speed Reading
A-39 Beginning Counting
A-40 Counting Skills
A-41 Addition I
A-42 Addition II
A-43 Addition III
A-44 Addition IV
A-45 Subtraction I
A-46 Subtraction II
A-47 Subtraction III
A-48 Multiplication I
A-49 Multiplication II
A-50 Multiplication III
A-51 Division I
A-52 Division II
A-53 Division III
A-54 Division IV

**Electric Book Co. Education Series**

A-55 Why?
A-56 When?
A-57 The Three Bears
A-58 Gingerbread Man
A-59 Baby Animals
A-60 Hoppy the Curious Kangaroo
A-61 Wild Animals
A-62 Tom Thumb
A-63 I Was a Second Grade Werewolf
A-64 Tough Eddie

## Plus these Super Accessories

- **Universal Blank Diskettes** (for Apple or Commodore) compatible with any 5¼" disk drive. Double-notched, DS/DD disks give single-sided users *twice* the storage at the same great price! Box of 5: $6.99. **Blank Diskettes:** 100% certified, DS/DD, Box of 10: $8.50.

**for Commodore 64/128**

- **ShareData 300C™ 300 Baud Modem:** Autodial, autoanswer, includes terminal software: $32.95.
- **Utility Cartridge:** 30 functions: $19.95
- **Warp Drive Cartridge:** Faster loading plus more functions for more efficient use of your computer: $19.95

**CALL TOLL-FREE**
CREDIT CARD ORDERS ONLY
1-800-257-9411
In Minnesota CALL:
(612) 829-1911

VISA MasterCard

Firstline Software, Inc.
P.O. Box 5297
Hopkins, MN 55343-2297

## ENHANCER 2000™ Disk Drive $149.95

plus $8.00 postage/handling

Commodore compatible floppy disk drive

### ORDER FORM

R-8

Please list the ordering number(s) (C-1, A-3, etc.) of the program(s) you wish to order and return this order form along with your check, money order or VISA/MasterCard information to: Firstline Software, P.O. Box 5297, Hopkins, MN 55343-2297.

I'm ordering the following programs:

___ ___ ___ ___
___ ___ ___ ___

☐ Check or money order enclosed
**U.S. FUNDS ONLY**
☐ VISA ☐ MasterCard

Card # _____
Expiration Date _____
Phone ( ) _____
Name _____
Sig. _____ Date ____

Total number of software pkgs. ____ x $6.99 each ..... $____
Boxes of 5 Universal blank disks ____ x $6.99 per box ... $____
Boxes of 10 blank disks ____ x $8.50 per box ..... $____
300C 300 Baud Modem ____ x $32.95 per modem ..... $____
Utility Cartridge ____ x $19.95 each ..... $____
Warp Drive Cartridge ____ x $19.95 each ..... $____
Enhancer 2000 Disk Drive ____ x $149.95 each ..... $____
Total amount of order ..... $____
Postage/handling (8.00 For Disk Drive; $2.00 For Software) ..... $____
MN Residents add 6% state sales tax ..... $____
**Total** (enclose check, money order or fill in VISA/MC information at left) $____

Money orders/Credit card orders shipped immediately.
Allow 4-6 weeks for delivery for check orders.

Name _____ Address _____
City _____ State ____ Zip ____

# Focus on Screen Shots

By ERVIN BOBO

*Taking high-quality photographs of your screen displays is a snap if you follow the advice of this professional photographer.*

Screen shots are useful for several reasons. You may wish to send a picture of your best graphics program to someone who has no computer, or include pictures when you submit a program for publication by a magazine or a software company. Or perhaps you want to prove your prowess in a game that doesn't save high scores to win a friend's admiration or a prize from the software publisher.

Whatever your reasons and regardless of your background in photography, you can make screen shots easily when you understand and follow a few simple rules.

### *Use a Tripod*

All good photographers understand the need for a camera to be absolutely steady at the instant of exposure. If they could, most would drive a shaft and anchor it in bedrock, then mount the camera in a vise welded to the top of the shaft. Failing that, buy the best tripod you can afford. Avoid the so-called "pocket" tripods that collapse to a length of about 12 inches. They are usually so frail that the legs will bow—rather like a spring—under the weight of the camera.

If your budget permits, purchase a tripod with a center brace between the legs. The brace increases steadiness and also prevents an accidental kick from folding the tripod up and dumping your camera. You should be able to find one for about $40.

No matter what your selection, make sure the movable head locks tight. You should be able to position and then tighten it so it will move only with great effort.

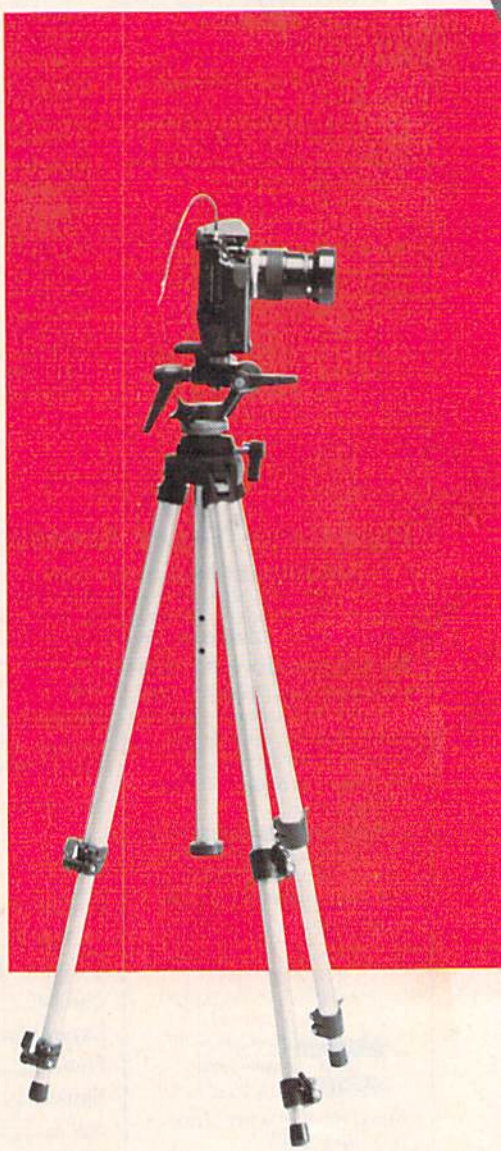
The elevation column should also lock tight. Avoid the smooth, friction type; instead, choose one with a geared crank. When it's locked, you should be able to press down hard on the head without the column slipping.

Now, once you've bought that tripod, what do you put on it?

### *The Camera*

There is no substitute for a single lens reflex (SLR) camera. In this type, a mirror arrangement enables the viewfinder to operate through the same lens that makes the picture. Because you see exactly what will register on the film, you can be precise in focusing and aligning your camera to photograph only the monitor screen, avoiding the clutter on your computer desk.

There are enough choices within the SLR family to confuse even the professional photographer, but we can eliminate half at the start. However, if you already have an SLR that does not measure up to the following criteria, don't despair.



*Photograph by Ed Judice*

Today, most SLRs are automatic to some degree. That is, not only do they measure the amount of light striking the lens, but they also adjust so that the correct amount for a proper exposure reaches the film.

When photographing Aunt Martha in Yellowstone Park, any camera may do. However, control of shutter speed is essential in photographing a monitor screen (for reasons I'll explain later). Therefore, if you buy a camera for this purpose, select a "shutter-preferred" automatic. With this type, you select the shutter speed, and the camera then selects the proper aperture (lens opening) to go with it.

Manual-exposure SLRs can be obtained today for about $150 and up. Shutter-preferred automatics start at about $200 and shutter- or aperture-preferred models start at about $250. (Although an aperture-preferred camera *can* be used, it's more difficult, requiring constant monitoring and adjustment, so I would avoid it.)

So, now that you've got your camera, what do you put in it?

### *The Film*

New photographers often make the mistake of buying the "fastest" (most light-sensitive) film available. Operating on the theory that more is better, they're convinced that a high-speed film will enable them to take pictures of anything, anytime, anywhere—and they remain convinced until their first action shot on a sunny day in July.

My favorite film for photographing a monitor screen is Kodak Ektachrome 100. The 100 refers to the emulsion speed, or light sensitivity, of the film, and by today's standards it's probably slow. For our purposes, however, slow is good.

Kodachrome 64 is another very good film, but Ektachrome gets my vote because most photo shops can develop it quickly, getting the finished slides into my hands about two days sooner than they could with Kodachrome.

Notice that I said *slides*. There are several reasons you should never use print film for photographing a screen. For instance, if you're hoping to get your photograph published, magazines and other print media work best from slides (properly called transparencies). Another compelling factor has to do with the way color prints are made.

The only way photofinishers can keep up with volume these days is by using automated printers, which are set up for an average mixture of colors. This system works fine until the machine receives a negative containing a preponderance of one color—as might be found on a monitor screen. An automatic printer would attempt to balance a blue screen with light blue or white type to "average," resulting in a photo with color distortion.

Slides, on the other hand, suffer no such manipulation. The finished product is exactly what you shot.

# VALUE-SOFT

9513 S.W. Barbur Blvd. B-56
Portland,Oregon 97219
DEALERS WELCOME

TOLL FREE
1-800-544-SOFT
OREGON CALL, 1-503-246-0924
Add $2.00 S & H. Visa and MC gladly.

## $ - SAVER SWITCH — $29.95

$ SAVER SWITCH CONNECTS TWO COMPUTERS TO ONE PRINTER OR DISK DRIVE. BETTER YET, SHARE A DRIVE AND PRINTER BETWEEN TWO COMPUTERS. LINK 2 PRINTERS TO 1 COMPUTER JUST FLIP THE SWITCH FROM ONE DEVICE TO THE OTHER.NO ALTERATIONS OR EXTRAS NEEDED, PLUGS IN.

MODEL 1...COMES WITH TWO 6 PINDIN FEMALE SOCKETS AND A 4 FT. 6 PINDIN MALE CABLE

MODEL 2....COMES WITH THREE 6 PINDIN FEMALE SOCKETS. CAN BE USED WITH MOST PRINTER INTERFACES

C-128 C-64 VIC-20

## THE BLACK BOOK OF C-128

OVER 75 EASY TO READ CHARTS AND TABLES
261 PAGES OF SOLID INFORMATION
NOT ONE WASTED PAGE
LAYS FLAT FOR EASY READING
COLOR CODED, ALWAYS FIND WHAT YOU NEED

WE ARE SO CERTAIN YOU WILL LIKE THE BLACK BOOK OF C-128, THAT WE MAKE THIS UNUSUAL OFFER, IF YOU DON'T FEEL THAT IT CONTAINS MORE INFORMATION THAN ANY OTHER REFERENCE BOOK FOR THE C-128, SEND IT BACK IN GOOD CONDITION WITHIN 10 DAYS. WE WILL REFUND THE PURCHASE PRICE WITH A SMILE.

$15.95

## 128 VIDEO CABLE

NO NEED TO BUY A NEW MONITOR FOR A 128. GET 80 COLUMNS ON THE 1701 OR 1702 MONITOR. SAVE BIG DOLLARS.

$12.95

## BRAND X

BRAND X IS A DISK CATALOGER. 4,000 ENTRIES OR 100 DISKS. ADD, SAVE TO FORMAT SCRATCH, ETC. IDENYIFIES 14 TYPES. PRINTS LIST IN ONE, TWO, OR THREE COLUMNS, AND LABELS. END THE DISK CONFUSION WITH BRAND X

C-64 $19.95

## CABLES

9 FT., 6 PIN DIN, MALE BOTH ENDS
PART # D69 ..... $8.95

18 FT., 6 PIN DIN, MALE BOTH ENDS
PART # C618 ..... $16.95

6 FT. EXTENDER, COMPUTER TO DISK DRIVE
6 PIN DIN, MALE TO FEMALE
PART # A66 ..... $6.95

MONITOR, 5 PIN DIN TO 4 RCA PLUGS
PART # D56 ..... $9.95

6 FT. EXTENSION, 5 PIN DIN, MALE/FEMALE
PART # E56 ..... $6.95

6 FT. MALE/FEMALE CENTRONICS CONECTOR
PART # FC6 ..... $39.95

PRECISION SCREW DRIVER SET. FOR COMPUTER REPAIRS, SWIVEL HEADS, 80,801, PHILLIPS, 1.4MM, 2.0MM, 2.4MM, 2.9MM .....$6.95

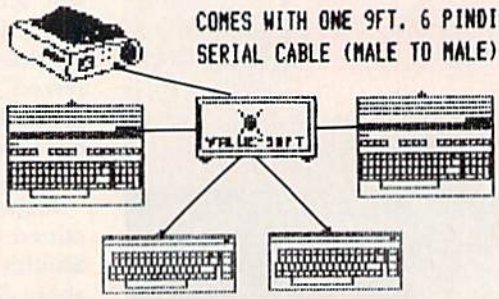
## TOOLS FOR USERS BY USERS

## SUPER SAVER

IDEAL FOR SCHOOLS AND BUSINES .....
MODEL 4 CONNECT UP TO FOUR COMPUTERS TO ONE DEVICE ..... $79.95

MODEL 6 CONNECT UP TO SIX COMPUTERS TO ONE DEVICE ..... $89.95

COMES WITH ONE 9FT. 6 PINDIN SERIAL CABLE (MALE TO MALE)



## PROTECTION REVEALED — $19.95

TAKE COMMAND OF YOUR SOFTWARE. END THE SPIRAL OF BUYING COPY PROGRAMS.THE PROTECTION REVEALED HANDBOOK UNRAVELS THE PUZZLE OF SOFTWARE PROTECTION.FOR AUTHORS AND USERS BECOME A MASTER OF ILLUSION. LEARN HOW TO PROTECT OR UN-PROTECT YOUR SOFTWARE. INCLUDES A LARGE SECTION ON SUCCESSFUL BASIC PROGRAM SECURITY. COVERS THE LATEST EVOLUTION OF COPY PROTECTION TECHNIQUES.TOPICS INCLUDE:

| | | |
|---|---|---|
| DISK ERRORS | DE-COMPILERS | EXTRA SECTORS |
| COMPILERS | DENSITY CHANGES | GAP BYTES |
| HALF TRACKS | NIBBLE BACK-UP | GUARD BAND |
| NIBBLE COUNTING | DOS PROTECTION | AUTO-LOADERS |

REVEALS THE MYSTICAL TRADE SECRETS OF THE C-64 A FREE DISK CONTAINING 21 UTILITY PROGRAMS IS INCLUDED. THIS BOOK IS WRITTEN FOR EVERYONE

## VIDEO LOG — $19.95

HAVE YOU EVER THOUGHT OF CATALOGING ALL THOSE MOVIES YOU HAVE BEEN SAVING ON VIDEO TAPE?

NOW YOU CAN DO THE JOB ON YOUR C-64 OR C-128. IN TRUE C-128 MODE, VIDEO LOG CAN HANDLE 2,000 FILMS OR 500 TAPES. THE C-64 VERSION ALLOWS FOR 1,000 TITLES OR 250 TAPES. A PRINTER IS NOT REQUIRED, BUT IF YOU HAVE ONE, PRINT COMPLETE CATALOGS OF YOUR LIBRARY OR LABELS FOR YOUR TAPES. LIST BY TAPE NUMBER OR FILM NAME. INFORMATION SAVED,TAPE NUMBER, FILM TITLE, COUNTER START AND END, LENGTH IN MINUTES, PLUS CATEGORY.

PLEASE STATE WHICH COMPUTER ( C-64 OR C-128 ) PROGRAM YOU WANT, AS THIS ONE RUNS IN TRUE 128 MODE ALSO.

FOR THE C-64 & C-128

## PROGRAMMER'S KIT

MORE THAN 150 USEFUL SUBROUTINES ON DISK.
JUST ADD THEM TO YOUR OWN PROGRAMS. SORTS GRAPHICS, PRINTER/DISK OPERATIONS, ETC.
LEARN TO WRITE PROGRAMS THE EASY WAY.

$18.95

## SUPER HELP — $15.95

THE PROGRAMMER'S BEST FRIEND
1. POSTER SIZE (21X28) SCREEN AND COLOR MEMORY MAP.
2. EXTENSIVE C-64 MEMORY MAP.
3. 18 BOUND REFERENCE CARDS. COMMANDS FOR THE DISK DRIVE, PRINTERS, & COMPUTER AT YOUR FINGER TIPS, GREAT FOR ANY LEVEL PROGRAMMER.

Circle 121 on Reader Service card.

Colors are true and sharpness is as good as your focusing; and in screen shots these parameters, as well as framing, are the ones that matter.

### *Framing the Picture*

Framing means taking a photo only of your monitor screen, not half of your computer desk as well. In order to isolate the monitor from its surroundings, you must use close-up lenses.

Such lenses, sometimes referred to as diopters, screw directly onto the lens housing of your camera, exactly as filters do, and optically change the focusing abilities of the camera's lens. Most normal camera lenses, 45 to 55 mm in focal length, focus as close as 18 inches. The diopter allows you to shorten this distance and fill the film frame with just the monitor screen.

Today, diopters are usually sold in sets of three, with values of +1, +2 and +4. They may be used separately or in combination, depending on how close you wish to be. I find that either a +1 or +2 is right for my needs. The price of a set of diopters varies, depending on the size needed to fit your lens, but you should be able to obtain a good set for less than $40.

When purchasing diopters, be sure to specify the filter size of your camera, rather than the focal length of your lens. Both numbers are marked on the lens housing and are frequently confused. The filter-size number is usually followed by a slashed zero.

Don't panic if, in framing, you find you can't avoid showing part of the monitor's picture-tube opening in the image. The height-width ratio of a 35mm film frame is 2:3, while the same ratio for the monitor screen is 3:4. You'll never get an exact match, but you will come close. Opt for getting some of the monitor casing in the photo rather than blocking it out by photographing only the center of the screen.

Because you're using an SLR and looking through a diopter as well as the lens, you'll find no trouble in focusing. And because the light meter in the camera takes its readings from the same vantage point, you'll have no need to compensate for the close-up lens. Take the exposure as indicated by the light meter display in your viewfinder and use it.

### *The Exposure*

You should always give preference to the shutter speed, for this is the most important factor in the expo-


# COMMODORE PLUS/4
# COMPLETE COMPUTER SYSTEM
## AT BELOW DEALER COST!

NOTE: Monitor not available. The Plus/4™ can hook up to your TV.
FREE!
WITH PURCHASE OF COMPLETE SYSTEM
20 TOP GRADE FLOPPY DISKS
RETAIL VALUE
$59.90
Ideal for home or business! Perfect for programmers!

**Factory new!**
**Factory warranted by Commodore®. Built-in software for word processing, data processing, spreadsheets and 128 color graphics!**

**Commodore®** designed this Plus/4™ specifically for **programmers and small businesses!** And then they made it **VERY EASY** to learn and use for novices. Popular business software is available for a variety of purposes. For programmers, this machine has easy-to-use powerful commands and 60K of usable memory. Can hook up as many as four disk drives.

Team up the computer with our compatible units of famous brand, factory reconditioned and warranted **DISK DRIVE** and **DOT MATRIX PRINTER!** Sorry, we can't print the brand name of the disk drive and printer. But phone us Toll-Free and we can tell you. With Disk Drive for data storage and Printer for "hard copies", you'll have a complete system...at low liquidation prices. Order **TODAY!**

Units sold individually or in any combination you desire.

| | Original List Price | YOUR COST |
|---|---|---|
| **PLUS/4 COMPUTER** Item H-1421-5035-001 Ship, hand: $8.00 | $299.00 | $79 |
| **DISK DRIVE** Item H-1421-3553-013 Ship, hand: $8.00 | $269.00 | $149 |
| **PRINTER** Item H-1421-3831-005 Ship, hand: $7.00 | $200.00 | $119 |
| **TOTAL** Ship, hand: $23.00 | $768.00 | $347 |

Additional Features of
**COMMODORE PLUS/4**
Data base of 999 records. Computer holds 99 lines of text before it must be transferred to disk drive. Excellent terminal for use with modem. 128 colors available for graphics. Split screen and windowing capabilities Compatible with all Commodore hardware except joystick and dataset. NOT compatible with C64 software.

**DISK DRIVE**
Intelligent, high-speed. External 5¼" floppy diskette recorder. 2K RAM, 16K ROM. Maximum storage of 170K formatted data: 35 tracks. Uses single sided, single density disk. Serial interface. Second serial port for chaining second drive or printer. Data transfer rate of 400 bytes per second.

**DOT MATRIX PRINTER**
Bi-directional 6 x 7 dot matrix impact printer. 60 characters per second. Has upper and lower case letters, numerals and symbols. All PET graphic characters. Standard friction feed. Maximum of 80 columns width, dot addressable. CBM, ASCII character codes. Original plus maximum of two copies. Paper width: 4.5" to 8.5". Size: 13"W x 8"D x 3¼"H. Weight: 6½ lbs.

**COMPLETE SYSTEM**
**WITH 20 FREE FLOPPY DISKS**
**Total Original List . . . $827.90**
**Liquidation Priced At Only . . . $339**
**Item H-1421-5035-019 Ship, hand: $19.00**

Credit card customers can order by phone, 24 hours a day, 7 days a week.
VISA MasterCard AMERICAN EXPRESS

**Toll-Free: 1-800-328-0609**
Sales outside contiguous 48 states are subject to special conditions. Please call or write to inquire.

COMB Direct Marketing Corp.
Authorized Liquidator
1405 Xenium Lane North
Minneapolis, Minnesota 55441-4494

C.O.M.B. Direct Marketing Corp. Item H-1421
1405 Xenium Lane No./Minneapolis, MN 55441-4494

Send the following items. (Minnesota residents add 6% sales tax. Sorry, no C.O.D. orders.)

Send ___ **COMPLETE SYSTEM(s)** Commodore Plus/4™, Disk Drive, Printer and Floppy Disks. Item H-1421-5035-019 at $339 each plus $19 each for ship, handling.

Send ___ **COMMODORE PLUS/4™ COMPUTER(s)** Item H-1421-5035-001 at $79 each plus $8 each for ship, handling.

Send ___ **DISK DRIVE(s)** Item H-1421-3553-013 at $149 each plus $8 each for ship, handling.

Send ___ **PRINTER(s)** Item H-1421-3831-005 at $119 each plus $7 each for ship, handling.

☐ My check or money order is enclosed. (No delays in processing orders paid by check, thanks to TeleCheck.)

Charge: ☐ VISA® ☐ MasterCard® ☐ American Express®

Acct. No. _____ Exp. ___/___

PLEASE PRINT CLEARLY

Name _____

Address _____

City _____

State _____ ZIP _____

Phone (___) _____

Sign Here _____

sure process when photographing a monitor screen. You probably know that images on a TV or monitor screen consist of lines "drawn" horizontally on the inside of the screen. An entire frame is drawn, from top to bottom, in 1/30 of a second. Due to persistence of vision, we do not perceive the individual frames, but a continuous flow.

Your camera sees differently. The shutter in most 35mm SLRs is a curtain with a vertical slit in it that moves horizontally across the film. Because the monitor image is drawn from top to bottom, a shutter speed faster than 1/30 of a second will result in a photo of a partially formed image. There might be a narrow band extending from the upper left to lower right (high shutter speed), or a dark shadow across an otherwise good slide (medium shutter speed).

For this reason, slow shutter speeds are best, and, as I've said, control over this aspect of picture-taking is most easily achieved with a shutter-preferred automatic camera. With your camera in place on the tripod, a close-up diopter on your lens and the best framing you can get, set your shutter speed to 1/8 or 1/4 of a second. Now, a little rudimentary math will tell you that, if the shutter is open for that long, the camera will register more than one frame. Exactly right, but unless there is a big change between successive screen images, it won't matter.

In fact, it will result in a better image on your film, because you're eliminating the chance of a partial image by photographing two or more frames. (Two frames at 1/8 of a second. If your calculations give you four, because 1/8 is approximately four times 1/30, it's because I didn't tell you about the blanking interval between frames. But let's not go into that.)

Now you see the reasons for locking the camera onto a steady tripod. Most people cannot hold a camera steady for an interval of 1/8 of a second.

Once you've set the shutter speed and locked it in, the automatic exposure mechanism in the camera will adjust the aperture correctly. Whether you're photographing a mostly black space scene or the brightly lighted instrument panel of a flight simulator, the exposure will be correct and you'll never have to change the shutter speed.

If you have an aperture-preferred automatic camera, as I mentioned, things are going to be trickier. Here, you set the lens opening and the camera selects the proper shutter speed for correct exposure. In photographing your monitor screen, this means you have to adjust the aperture until the shutter-speed indicator shows you have a working speed within the 1/8- to 1/4-second range. Using this type of camera is more work, but it can be done, and if it's the kind you own, use it.

A manual camera works like a combination of the two just mentioned. Because it's manual, you can set the shutter speed and never have to worry about it again. As screens change, you simply adjust the aperture until the exposure indicator needle is centered in its bracket or (depending on the camera) until the LED display indicates a correct setting.

### *Tips on Technique*

Before snapping the picture, inspect the image in the viewfinder carefully. Look for signs of glare on the monitor screen. These must be eliminated.

In my computer room, overhead


MOVING?

SUBSCRIPTION PROBLEM?

Get help with your subscription by calling our new toll free number:

**1-800-645-9559***

between 9 a.m. and 5 p.m. EST, Monday–Friday.

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment

If moving, please give both your old address and new address.

* New York State residents call 1-800-732-9119.

ATTENTION

*Foreign Computer Stores*
*Magazine Dealers*

You have a large technical audience that speaks English and is in need of the kind of microcomputer information that CW/Peterborough provides.

Provide your audience with the magazine they need and make money at the same time.

For details on selling **80 MICRO, inCider, HOT CoCo, RUN** contact:

SANDRA JOSEPH
WORLD WIDE MEDIA
386 PARK AVE., SOUTH
NEW YORK, NY 10016
PHONE (212) 686-1520
TELEX—620430

lights behind me provide the light by which I work—and also create interesting reflections on the screen. Normally, these reflections are no bother because my mind and eye work together to see only what they wish to see—selective vision. However, a camera sees everything.

To eliminate the reflections during a photo session, I turn off all lights but one small fluorescent at the far end of the room. It provides just enough illumination to see my camera settings clearly. In the absence of such an arrangement, I would advise turning out all lights, drawing shades and working by the light of a penlight or the monitor itself.

Although it should be obvious, a clean monitor screen is as imperative as one free of reflections. Be sure you've removed all dust and fingerprints and that your glass cleaner has completely dried before taking any photographs.

As a final note on technique, I would advise that if the game routine you're photographing has a "demo" mode, use it. It can be very tricky to handle a joystick and camera simultaneously. An alternative is to have someone else play the game while you photograph it (the best use I can think of for a kid brother!). Programs with a "pause" feature that freezes the action are best of all, allowing pictures of explosions, lasers and the like and enabling you to work at a leisurely pace.

And what do you do with the finished product?

### *The Slides*

If you've never worked with slide film before, you'll find that the transparencies will return from your photofinisher already installed in cardboard or plastic mounts. (If he asks if you want them mounted, say yes.)

However, mounting won't protect them from dust and fingerprints. If you don't touch it first, dust is easy to clean off with a blower brush of the kind used to clean camera lenses. Your photo salesman will be glad to sell you one. Gently squeezing the bulb directs a puff of air at the dust on the slide, and a whisk of a camel's-hair brush will take care of any that's left.

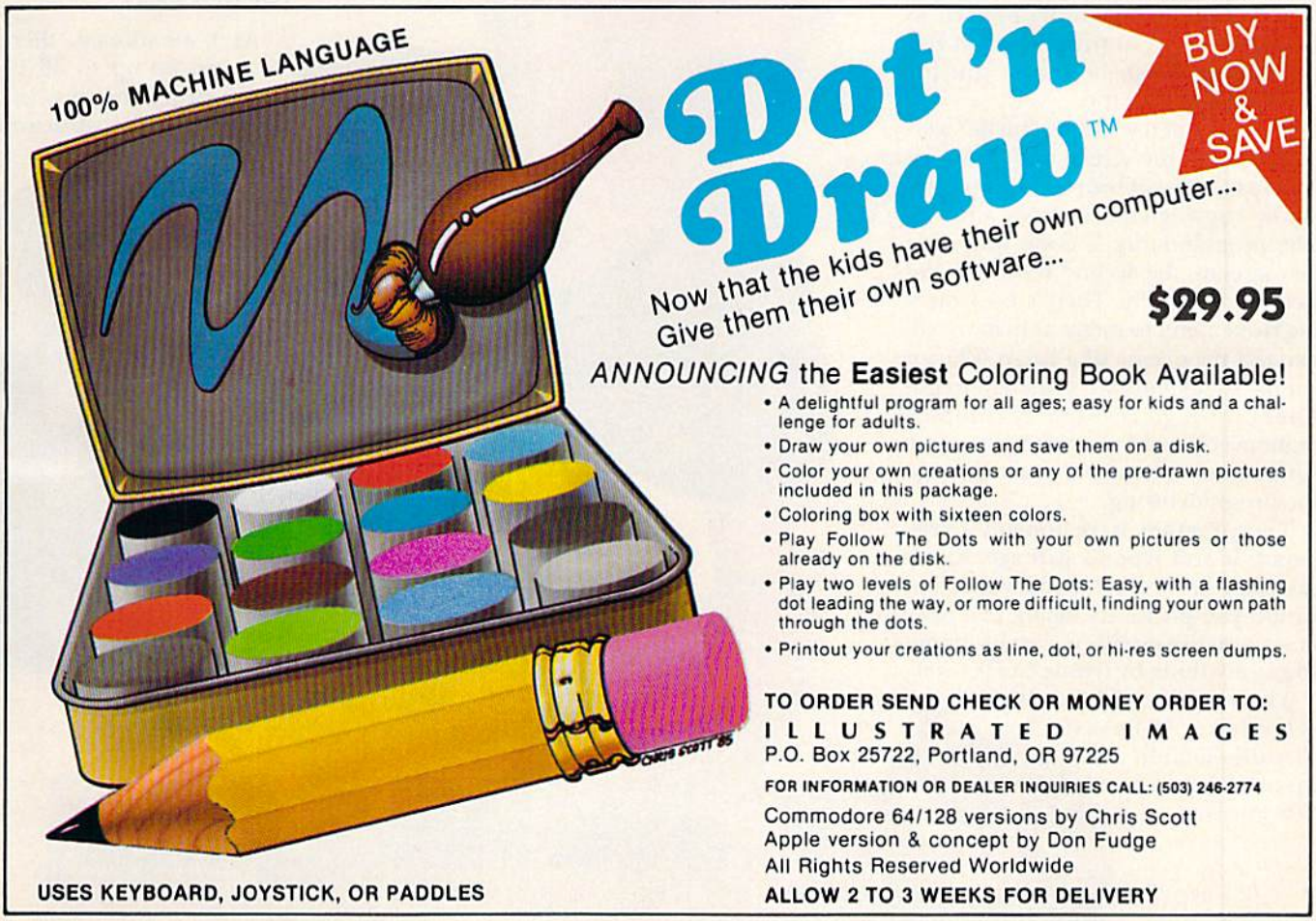
Fingerprints are another matter. The oils of your hand can eat into the photographic emulsion, permanently etching your fingerprint into the slide. While this may be an excellent way to provide identification and prosecute unauthorized use, it's not recommended.

Handle slides only by the edges of the mounts. Store them in the little plastic boxes in which they were returned to you, and, if you should have to mail them somewhere, don't drop them loosely into an envelope. Instead, purchase a supply of transparent vinyl album pages made for slides. These provide adequate protection, and the slides can be viewed without being removed. If you don't want to waste an entire page for only a few slides, then cut the page into strips of four or five pockets.

So, there you have it—screen shots with photographic equipment you probably already have—and a minimum of fuss. I hope they help you sell your program or win that cherished gaming trophy. R

*Ervin Bobo, 23 St. Lawrence, St. Peters, MO 63376, is a professional photographer.*

Circle 67 on Reader Service card.


100% MACHINE LANGUAGE
Dot 'n Draw™
BUY NOW & SAVE
Now that the kids have their own computer...
Give them their own software...
$29.95
ANNOUNCING the Easiest Coloring Book Available!
• A delightful program for all ages; easy for kids and a challenge for adults.
• Draw your own pictures and save them on a disk.
• Color your own creations or any of the pre-drawn pictures included in this package.
• Coloring box with sixteen colors.
• Play Follow The Dots with your own pictures or those already on the disk.
• Play two levels of Follow The Dots: Easy, with a flashing dot leading the way, or more difficult, finding your own path through the dots.
• Printout your creations as line, dot, or hi-res screen dumps.
TO ORDER SEND CHECK OR MONEY ORDER TO:
ILLUSTRATED IMAGES
P.O. Box 25722, Portland, OR 97225
FOR INFORMATION OR DEALER INQUIRIES CALL: (503) 246-2774
Commodore 64/128 versions by Chris Scott
Apple version & concept by Don Fudge
All Rights Reserved Worldwide
ALLOW 2 TO 3 WEEKS FOR DELIVERY
USES KEYBOARD, JOYSTICK, OR PADDLES

# Turtle-Tutor for Tykes

*Slow and steady wins the race for Elmer the artistic turtle, as he introduces your child to computer programming.*

By PETER CROSBY

Children under six or seven are fascinated by computers, but limited in what they can create with them, since they can't read or handle detail well enough to program. I wrote Elmer the Turtle, an introductory turtle-graphics program, for my own children so they could start to program, and I've found that it can be useful fun for beginning adults, too.

Elmer is a pen-wielding "turtle" who moves about the screen and draws according to a list of instructions you create by copying choices from a menu. The programming is done with only two screens, the second following the first automatically. There's no switching from menu to menu as in more advanced programs like Logo. Eleven simple statements are sufficient to put Elmer through reasonably complex maneuvers, and four rudimentary editing commands enable you to arrange the program listing.

The program is reasonably crash-proof. If you type in garbage, Elmer just says he doesn't understand and would you please try again. If it does crash, you can usually restart it without losing anything by typing GOTO 700.

The statement list for Elmer is limited to 36 lines so that they'll all fit on one screen. Obviously, after a while you'll want more room. That's when you move on to Logo or regular turtle graphics. Since Elmer's vocabulary and procedures carry over, you'll have a valuable head start.

### *Talking to Elmer*

As I mentioned, there can be up to 36 instructions in a list. Each instruction

has a line number. After a couple of introductory screens that explain what the program is about, a display appears with an empty list of all the line numbers and, at the bottom, a menu of three choices.

You can go to a line number you specify to write in an instruction; you can type E to make Elmer follow the instructions you've already written; or you can type NEW to clear your list and start afresh. Of course, when you're just beginning to play, only the first choice, writing instructions, is viable. So, type in the line number you want—probably 1—and hit the return key. The next screen displays all the possible instructions for making Elmer walk and draw, and for editing the list. (See Table 1.)

Choose a direction for Elmer to walk by typing the appropriate word, then tell him how many steps he should take in that direction. You must include the number—he won't understand otherwise. When you press the return key again, your instruction will appear at the specified line number in the list.

To make Elmer draw, tell him PEN DOWN. He'll place his pen on the screen and draw a trail behind him. When you say PEN UP, he'll lift the pen and leave no mark at all. The drawing instructions need no following numbers.

Elmer usually uses an asterisk for drawing his trail, because he thinks it looks like a turtle. However, he'll draw with any other character you choose. Just type the instruction CHAR, followed by a space and the character you want. For example, CHAR E makes him leave a trail of *E*s. You can request any letter, number or punctuation mark on the keyboard except the Commodore graphics symbols.

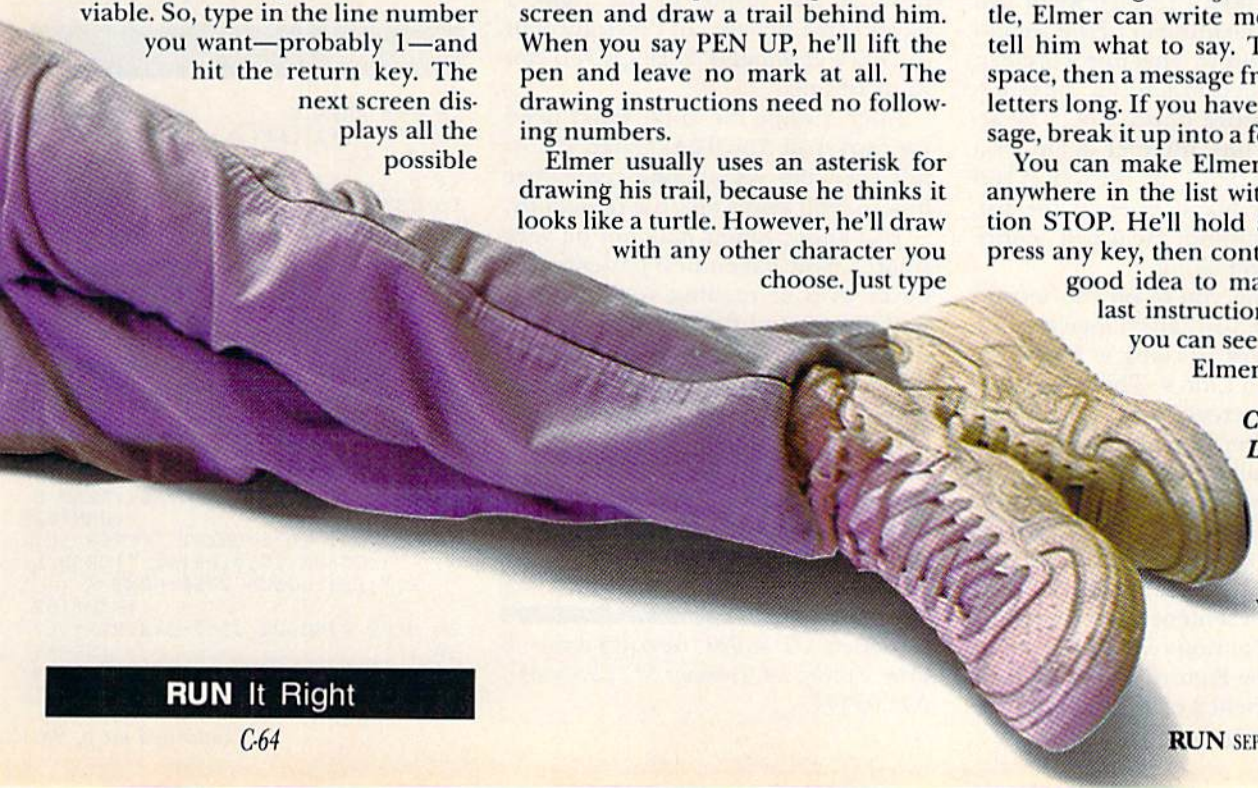
Elmer can draw in 16 different colors (listed in Table 2). To change color, type COLOR, a space and the number of your choice, 0 to 15. If you have a monochrome monitor, you can choose from seven shades.

Even though he's just a silly old turtle, Elmer can write messages if you tell him what to say. Type TEXT, a space, then a message from one to ten letters long. If you have a longer message, break it up into a few short ones.

You can make Elmer stop moving anywhere in the list with the instruction STOP. He'll hold still until you press any key, then continue on. It's a good idea to make STOP the last instruction on a list, so you can see what you and Elmer have created.

### *Changing the List*

You can alter Elmer's instructions in various ways



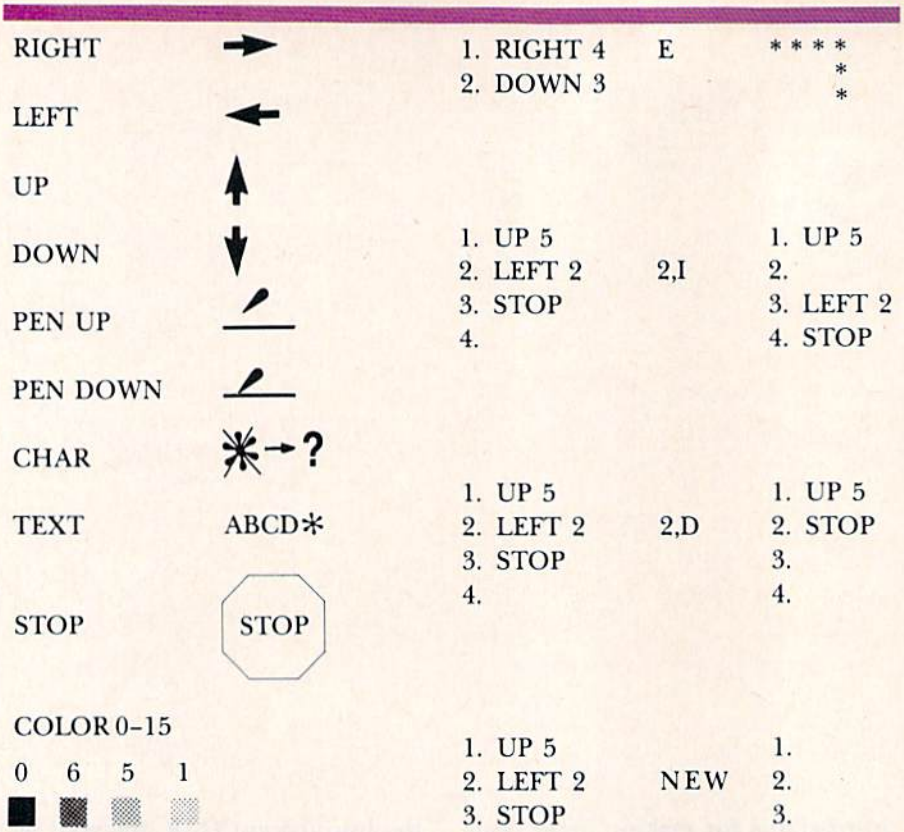



**Figure 1.** *Prompt card of commands for non-readers.*

after you've written them. As I mentioned earlier, NEW erases the whole list. To erase only one line, specify the line number, then type D for delete. The instruction at that line number will disappear, and all the ones below it will move up.

If you need to change an instruction instead of erasing it, type the new version after designating the line number. To add a line between two others, type the number of the second and an I for insert. That line will clear, and its instruction and all those following will move down. Then, by accessing that line number again, you can fill in the blank. By the way, if you should leave blank lines in the list, Elmer won't mind. He'll just ignore them and plod along.

At any time you're on the second menu screen, you can change the line number you're working at by typing B, for Back to Line #. This recalls the first menu screen, where you can choose another line number.

Although all the commands are displayed on the screen, I also keep explanatory notes by the computer for the children to refer to. For those who can read, I provide a list of the commands, with a sentence describing the use of each. For non-readers, I've made up a card (see Figure 1) with little descriptive sketches of most of the instructions to Elmer (on the left) and brief examples (on the right) of how the E and editing commands work.

You'll have to explain the E and editing command examples thoroughly at first, but once the child understands, they'll serve as good reminders. In each example, you start with the instructions on the left, then enter the command in the middle to produce the result on the right. I never came up with an illustration of the Back command. Perhaps you can think of one.

After a while the child won't need the card at all. You'll be amazed at how fast even the very young remember how to spell words they use frequently.

You know, Elmer may not be very smart, but he has endless patience. He never tires of reading your list and walking around the screen following directions. He tells you when he doesn't understand, and gives you as many tries as you need to get it right.

Nowadays, when I'm done using our Commodore, I load in Elmer the Turtle and leave it on. More often than not, some visitor passes by and starts to play. Bingo!—another programmer is born. R

*Address all author correspondence to Peter Crosby, 24 Tremont St., Claremont, NH 03743.*

RIGHT
UP
DOWN
INSERT
LEFT
PEN UP
PEN DOWN
DELETE
CHAR
COLOR
TEXT
BACK TO LINE #
STOP

**Table 1.** *Commands for directing Elmer and for editing the instruction list.*

0 BLACK
1 WHITE
2 RED
3 CYAN
4 PURPLE
5 GREEN
6 BLUE
7 YELLOW
8 ORANGE
9 BROWN
10 LIGHT RED
11 DARK GRAY
12 MEDIUM GRAY
13 LIGHT GREEN
14 LIGHT BLUE
15 LIGHT GRAY

**Table 2.** *Color choices.*

## Listing 1. *Elmer the Turtle program.*

```
10 REM ARRAYS                :REM*18
12 DIM B(12),A$(36),B$(36),C$(12
   )                         :REM*50
14 :                         :REM*246
16 REM TITLE                 :REM*196
18 POKE 53280,7:POKE 53281,7
                             :REM*192
20 A$="*":TL=40:PRINT "{SHFT CLR
   }{CTRL 7}{5 SPACEs}";A$;:FOR
   F=1 TO 3                  :REM*252
22 FOR A=1 TO 6:GOSUB 2750:PRINT
    "{CRSR LF} {CRSR LF}{CRSR DN
   }";A$;:NEXT A             :REM*130
24 FOR A=1 TO 5:GOSUB 2750:PRINT
    "{CRSR LF} {2 CRSR LFs}";A$;
   :NEXT A                   :REM*202
26 GOSUB 2750:PRINT "{CRSR LF} {
   CRSR LF}{CRSR DN}";A$;:READ B
   $:GOSUB 2950              :REM*82
28 FOR A=1 TO 5:PRINT "{CRSR LF}
    ";:GOSUB 2750:PRINT "{CRSR L
   F}";A$;:GOSUB 2750:NEXT A
                             :REM*162
29 NEXT F:GOSUB 2550:D=0:REM*167
30 :                          :REM*6
32 REM INSTRUCTIONS          :REM*64
```

*Continued on p. 98.*

Circle 68 on Reader Service card.

*When it comes to flying fighter planes*

# IT'S THE MAN— NOT THE MACHINE

*that makes the difference*

TOP GUNNER™ Collection

**MIG Alley Ace:** Thrilling head-to-head Sabre Jet aerial dog fighting includes single player flying mode, as well as two player competition.

**Hellcat Ace:** Exciting 3-dimensional aerial combat over the Pacific in World War II. For one to four players.

**Air Rescue:** Sensational assault chopper rescue raids for daring pilots in solo or team configuration. For one to eight players.

See your local software retailer for this and other exciting MicroProse products. Or call direct for MC/VISA orders.

The Top Gunner Collection is available for Commodore 64® and Atari XL/XE computers at a suggested retail of only $24.95.

Screen shots from Commodore 64

Commodore 64 and Atari are registered trademarks of Commodore Electronics, Ltd., and Atari Inc.

*Do you have what it takes?*

- Guts
- Stamina
- Intense concentration
- Fast reflexes
- Willingness to take risks
- Good eye-hand coordination

*If so, the Top Gunner Collection prepares you for the basics in flight training and combat tactics:*

- Fly solo or in team configuration
- Maneuver in 3-D space
- "See and avoid" techniques
- Advanced aerobatics: loops, rolls, G's, split S's
- Outfly the enemy

*"You'll experience the wind in your face and the intense dog fighting action of some of the world's most honored and respected combat aviators: the original stick-and-rudder fighter pilots!"*

MAJOR BILL STEALEY,
U.S.A.F. Reserve
President, MicroProse
(over 3,000 flying hours)

MICRO PROSE
SIMULATION • SOFTWARE

120 Lakefront Drive, Hunt Valley, MD 21030 (301) 667-1151

# RUN Basic

*Add a host of powerful graphics commands to Basic 4.5 and turn your C-64 into the graphics machine it was meant to be.*

*By ROBERT ROCKEFELLER*

RUN Basic, an extended Basic for the C-64, adds 30 new commands to Basic 4.5 (published in *RUN*'s June, July and August 1985 issues). RUN Basic includes commands for graphics, structured programming and named subroutines with local variables, among other features. It is aimed at fairly competent programmers, and even they will need to closely examine the demo programs to learn how to use these new powerful commands effectively.

### *Turtle Graphics*

Most of RUN Basic's commands are for turtle graphics, so we'll start with a description of these. In most forms of turtle graphics, the cursor is a crude representation of a turtle, to be imagined as holding a pen. You move the turtle with commands such as

```
AHEAD 30: TURNTO HEADING + 1:
BACK 59
```

When the turtle pen is down, you may draw or erase lines on the screen; when it's up, you can move the turtle without having it draw anything.

RUN Basic doesn't use a turtle because it slows the drawing process. For the sake of consistency, however, I refer throughout this article to the current position of the drawing pen on the hi-res screen as a turtle.

When plotting turtle graphics, RUN Basic uses a standard Cartesian coordinate system with the origin (0,0) at the lower left of the screen. The screen is 320 pixels wide and 200 pixels high.

Many of RUN Basic's turtle graphics commands require you to supply a color in the parameter string. The colors are specified as follows:

| | |
|---|---|
| 0—black | 8—orange |
| 1—white | 9—brown |
| 2—red | 10—light red |
| 3—cyan | 11—dark gray |
| 4—purple | 12—medium gray |
| 5—green | 13—light green |
| 6—blue | 14—light blue |
| 7—yellow | 15—light gray |

### *Turtle Graphics Commands*

**HIRES**. Command format: HIRES <screen-color (0–15, plot-type-color1 (0–15)>.

HIRES initializes a high-resolution bit-map graphics screen, but it does not clear the screen. This permits the Hi-res mode to change the current colors while drawing. It also permits all 16 colors to be displayed simultaneously on the high-resolution screen. Each block of the hi-res screen is eight pixels wide and eight pixels high and can have a unique screen and plot color combination. Sample RUN Basic line:

```
10 HIRES 1,0 : REM WHITE HI-RES GRAPHICS SCREEN WITH BLACK PIXELS
```

**MEDRES**. Command format: MEDRES <screen-color (0–15), plot-type-color #1 (0–15), plot-type-color #2 (0–15), plot-type-color #3 (0–15)>.

MEDRES is similar to the HIRES command except that it initializes a multi-color graphics mode. In Med-res mode, each four-pixel-wide by eight-pixel-high block of the med-res screen can simultaneously display three different colors, plus the screen color. By using MEDRES to select new drawing colors, all 16 colors can appear on the same med-res screen. Sample RUN Basic line:

```
10 MEDRES 0,7,3,4: REM YELLOW, CYAN & PURPLE DRAWING COLORS ON A BLACK SCREEN
```

**TEXT**. Command format: TEXT.

The TEXT command reverts the screen from Hi-res or Med-res mode to the text screen. Sample RUN Basic line:

```
10 TEXT: REM TO LOW-RES SCREEN
```

**GCLR**. Command format: GCLR.

GCLR clears the graphics screen. This command should be executed at the beginning of every RUN Basic turtle graphics program, to clear the graphics screens. Sample RUN Basic line:

```
10 GCLR: REM CLEARS HIRES & MEDRES SCREENS
```

**PEN**. Command format: PEN <plot-type (0–3)>.

PEN determines whether RUN Basic's pen will draw or erase when lowered. Following is a description of each plot type.

0—Erases with screen color in Hi-res or Med-res mode.
1—Plots in Hi-res mode with the plot-type color selected in the HIRES command. In the Med-res mode, drawing will be done with plot-type color #1.
2—Plots in Med-res mode with Med-res color #2.
3—Plots in Med-res mode with Med-res color #3.

Sample RUN Basic lines:

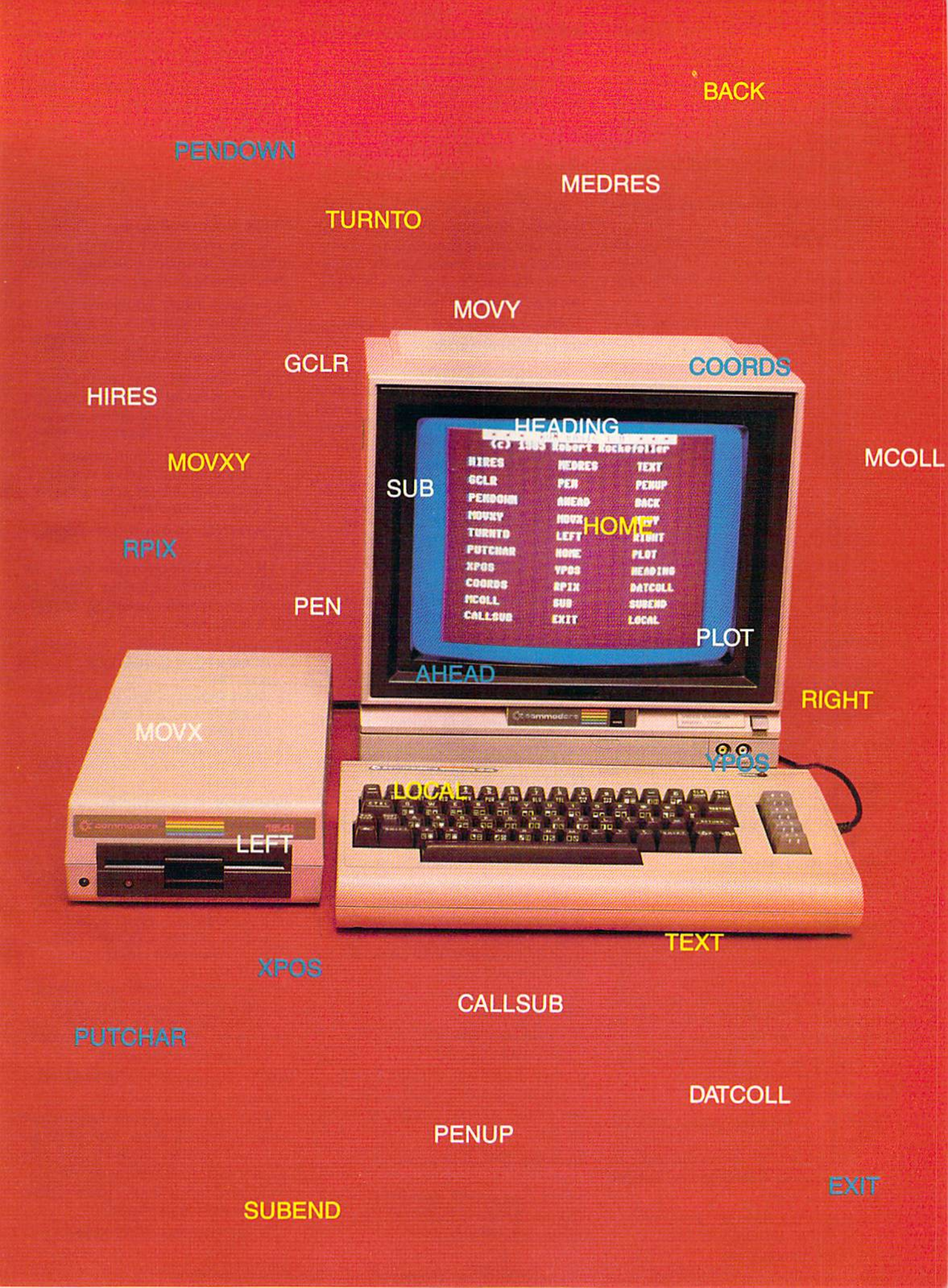
```
10 PEN 0: REM LINE ERASES AS IT PLOTS
10 PEN 3: REM LINE DRAWS AS IT PLOTS
```

**PENUP**. Command format: PENUP.

**RUN** It Right

*C-64; Basic 4.5*

*Photograph by Edward Judice*


BACK
PENDOWN
MEDRES
TURNTO
MOVY
GCLR
COORDS
HIRES
HEADING
MOVXY
MCOLL
SUB
HOME
RPIX
PEN
PLOT
AHEAD
RIGHT
MOVX
YPOS
LOCAL
LEFT
TEXT
XPOS
CALLSUB
PUTCHAR
DATCOLL
PENUP
EXIT
SUBEND

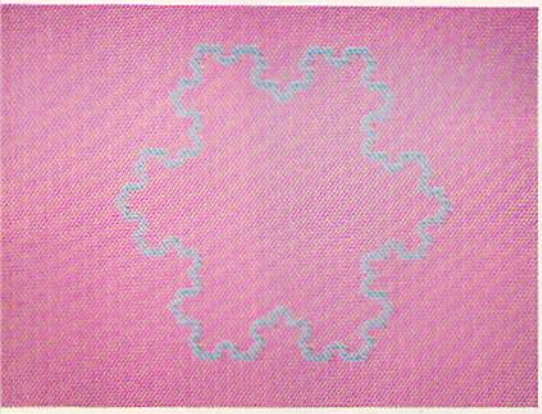
PENUP is used to stop drawing. After PENUP is executed, drawing commands such as AHEAD, BACK and MOVXY will not draw. RUN Basic's turtle moves to its new location without drawing a line. Sample RUN Basic line:

```
10 PENUP: REM STOP PLOTTING LINE HERE
```

**PENDOWN**. Command format: PENDOWN.

PENDOWN is the Default mode and allows lines to be drawn when RUN Basic's turtle is moved. Sample RUN Basic line:

```
10 PENDOWN : REM RESUME OR BEGIN PLOTTING HERE
```



**AHEAD**. Command format: AHEAD <number of units>.

AHEAD moves the turtle the specified number of pixels ahead. Sample RUN Basic line:

```
10 AHEAD 30.5 : REM MOVE TURTLE 30.5 PIXELS FORWARD
```

**BACK**. Command format: BACK <number of units>.

BACK moves the turtle the specified number of pixels backwards. Sample RUN Basic line:

```
10 BACK 162: REM MOVE TURTLE BACK 162 PIXELS
```

**MOVXY**. Command format: MOVXY <x-coordinate, y-coordinate>.

MOVXY moves the turtle to the position specified by the x,y coordinates. If the pen is down during the execution of MOVXY, a line will be drawn. Sample RUN Basic line:

```
10 MOVXY 10,39: REM MOVE TURTLE TO THE INTERSECTION OF X (10) AND Y (39)
```

**MOVX**. Command format: MOVX <x-coordinate>.

This command moves the turtle to the specified x-coordinate. Sample RUN Basic line:

```
10 MOVX 100: REM MOVE THE TURTLE TO THE X-COORDINATE (100)
```

**MOVY**. Command format: MOVY <y-coordinate>.

This command moves the turtle to the specified y-coordinate. Sample RUN Basic line:

```
10 MOVY 199 : REM MOVE THE TURTLE TO THE Y-COORDINATE (199)
```

**TURNTO**. Command format: TURNTO <angle>.

TURNTO points the turtle in the specified direction. The angle must be in radians, as used in Basic 2.0. A radian is a unit of measure for angles or arcs. To convert degrees to radians, use the following equation:

Radian measure of an angle = number of degrees *$\pi$/180

An angle of 0 (radians *or* degrees) points the turtle to the right, on a heading parallel to the x-axis. An angle of $\pi$/2 radians, or 90 degrees, points it straight up, parallel to the y-axis. Sample RUN Basic line:

```
10 TURNTO .4 : REM POINTS THE TURTLE UP AT AN ANGLE OF 23 DEGREES MEASURED COUNTERCLOCKWISE FROM THE 0 DEGREE DIRECTION.
```

**LEFT**. Command format: LEFT <angle>.

LEFT turns the turtle left from its current direction by the specified angle (always in radians). Sample RUN Basic line:

```
10 LEFT .3 : REM TURNS THE TURTLE 17 DEGREES TO THE LEFT
```

**RIGHT**. Command format: RIGHT <angle>.

This command turns the imaginary turtle right by the specified angle. Sample RUN Basic line:

```
10 RIGHT π/4: REM TURNS THE TURTLE 45 DEGREES TO THE RIGHT
```

**PUTCHAR**. Command format: PUTCHAR <screen-code-value (0–255)>.

The PUTCHAR command draws the specified character at the current turtle position. The character is specified by its screen-code value, not its ASCII value. Check your user's guide for a table of screen codes. Sample RUN Basic line:

```
10 PUTCHAR 1: REM PRINT AN "A" AT CURRENT POSITION
```

**HOME**. Command format: HOME.

HOME moves the turtle to the center of the screen. Sample RUN Basic line:

```
10 HOME : REM MOVE TO CENTER OF SCREEN
```

**PLOT**. Command format: PLOT <plot-type (0–3), x-coordinate (0–319), y-coordinate (0–199)>.

The PLOT command plots one pixel at the specified coordinates using the specified plot-type (see definitions of plot-types under the PEN command, above). The location of RUN Basic's imaginary turtle has no effect on this command. Sample RUN Basic line:

```
10 PLOT 1,100,38 : REM PLOT A VISIBLE PIXEL AT X (100), Y (38)
```

**XPOS**. Command format: XPOS.

XPOS returns the current x-coordinate of the turtle's position. Sample alternative RUN Basic lines:

```
10 A = XPOS : PRINT A: REM PRINTS CURRENT X POSITION OF TURTLE
10 PRINT XPOS : REM PRINTS CURRENT X POSITION OF TURTLE
```

**YPOS**. Command format: YPOS.

This command returns the current y-coordinate of the turtle's position. Sample alternative RUN Basic lines:

```
10 A = YPOS : PRINT A: REM PRINTS CURRENT Y POSITION OF TURTLE
10 PRINT YPOS : REM PRINTS CURRENT Y POSITION OF TURTLE
```

**HEADING**. Command format: HEADING.

HEADING is used to determine the angle of the direction in which the turtle is currently pointing. Sample RUN Basic lines:

```
10 A = HEADING : PRINT A : REM PRINTS CURRENT ANGLE TURTLE IS POINTING
10 PRINT HEADING : REM PRINTS CURRENT ANGLE TURTLE IS POINTING
10 TURNTO HEADING + .1 : REM TURN TO CURRENT HEADING PLUS .1 RADIAN
```

**COORDS**. Command format: COORDS (x-coordinate, y-coordinate).

This command returns the direction from the turtle's position to the specified coordinates. Sample RUN Basic lines:

```
10 A = COORDS(0,0) : PRINT A : REM PRINTS THE DIRECTION OF THE POINT (0,0) FROM THE TURTLE'S POSITION
10 PRINT COORDS(31,29) : REM PRINTS THE DIRECTION OF POINT (31,29) FROM THE TURTLE'S POSITION
10 TURNTO COORDS(150,36): REM TURNS TURTLE TOWARDS (150,36)
```

**RPIX**. Command format: RPIX (x-coordinate, y-coordinate).

RPIX is used to return the plot-type used to draw a pixel. The plot-type returned in Med-res mode will vary from 0 to 3. In Hi-res mode, the plot-type returned will be either 0 or 1. Sample RUN Basic lines:

```
10 A = RPIX(300,150): PRINT A : REM
```

PRINTS THE PLOT-TYPE USED AT 300,150

```
10 ON RPIX(QT,QS) GOSUB 100,200 : REM GOSUB WHEN THE ARGUMENT IS SATISFIED
```

### *Sprite Commands*

**DATCOLL.** Command format: DATCOLL.

DATCOLL returns the contents of the sprite-background collision register. If a sprite collides with the background, its corresponding bit is set. Bit 0 corresponds to sprite 1, bit 1 corresponds to sprite 2, etc. Sample RUN Basic lines:

```
10 IF DATCOLL AND 128 THEN GOSUB 1000: REM HANDLE SPRITE 8 COLLISION
10 A = DATCOLL : PRINT A : REM PRINTS SPRITE/BACKGROUND COLLISION OCCURRED
10 PRINT DATCOLL : REM PRINTS SPRITE/BACKGROUND COLLISION OCCURRED
```

**MCOLL.** Command format: MCOLL.

MCOLL returns the contents of the sprite-sprite collision register. When two sprites collide, their corresponding bits are set. The sprites are then mapped to the register bits in a slight variation of the method explained under DATCOLL. The difference is that the collision of two sprites sets two bits instead of one. Sample RUN Basic lines:

```
10 IF MCOLL = 4 + 2 THEN GOTO 6000 : REM SPRITES 3 AND 2 HAVE COLLIDED
10 IF MCOLL = 8 + 16 + 32 THEN GOTO 4000 : REM SPRITES 4, 5 AND 6 HAVE COLLIDED
10 PRINT MCOLL : REM PRINTS IF SPRITE/SPRITE COLLISION OCCURS
10 A = MCOLL : REM IDENTIFIES SPRITE/SPRITE COLLISION OCCURRED
```

### *Structured Programming*

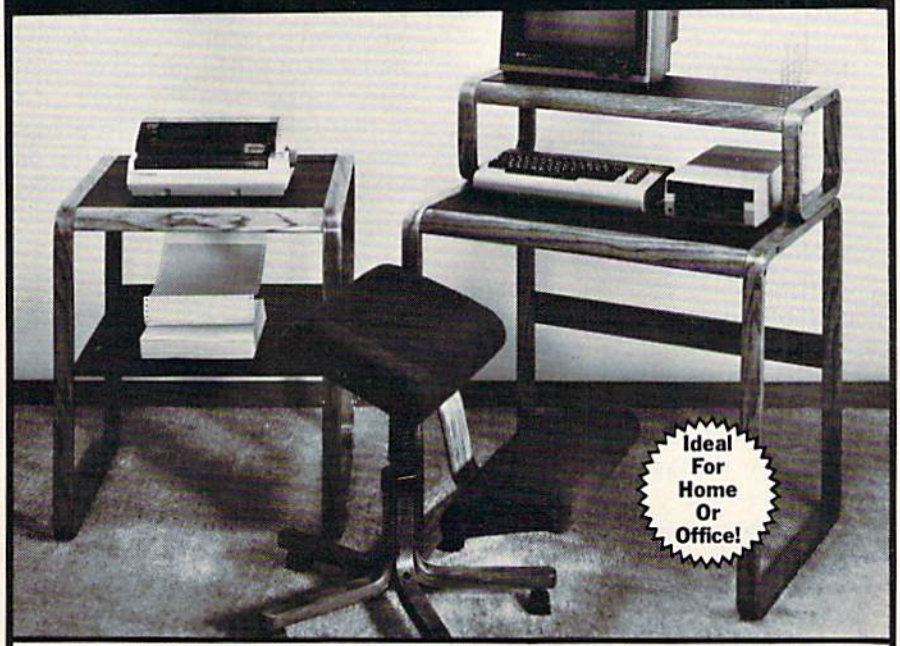
**SUB.** This is used to declare a named subroutine that can be executed with the CALLSUB command. The subroutine's name must follow the SUB command and may be up to 31 characters long, though only the first four letters are significant.

Unlike variables, Basic commands can be embedded within the name. SUB PRINT-IT(A$) is an acceptable subroutine title. Punctuation and spaces can be used within the name, but graphics characters cannot.

Parentheses that enclose an optional list of variables must follow the name. The optional list of variables contains any values to be passed to the subroutine. This passing of values is


COMB

Authorized Liquidator




# BIG SAVINGS! SOLID OAK COMPUTER FURNITURE!

***Organize your computer equipment for more efficient operation by using these attractive matching furniture pieces!***

The manufacturer decided to discontinue these models when new styles were added to its line. As a result, we are able to offer this contemporary SOLID OAK furniture at unusually low prices! All pieces come ready for easy assembly.

**COMPUTER DESK**

- Sturdy solid oak framework with attractive curved front edge.
- Non-glare slate-look work surfaces.
- 10" x 31" hutch and main work area.
- Hutch rises 7⅛" above main work area.
- Size: 37" H x 31" W x 23" D.

**Mfr. List: $121.00** **$59**

**Liquidation Price . . . . . .**

**Item H-1431-4963-005 Ship, handling: $9.00**

**PRINTER TABLE**

- Provides extra storage space you need in a functional manner.
- Sturdy solid oak framework with attractive curved front edge.
- Non-glare, slate-look work surface on top shelf.
- Large bottom shelf with paper feed. (20¾" x ½").
- Size: 28" H x 23¾" W x 24½" D.

**Mfr. List: $115.00** **$49**

**Liquidation Price . . . . . .**

**Item H-1431-4963-013 Ship, handling: $9.00**

**MOBILE POSTURE CHAIR**

- The answer to sitting fatigue.
- Special design lets you sit up naturally straight.
- Helps reduce effect of gravity on your back muscles.
- Fully padded knee rest and seat allow you to sit in comfort for hours.
- Ideal as computer or typing chair.
- Chair swivels and rolls on casters for easy mobility.
- Sturdy solid oak five-blade base.
- Handsome brown upholstery.

**Mfr. List: $110.00** **$49**

**Liquidation Price . . . . . .**

**Item H-1431-8150-005 Ship, handling: $9.00**

**SEND TO:** Item H-1431
**C.O.M.B. Direct Marketing Corp.**
**1405 Xenium Lane No./Minneapolis, MN 55441-4494**

Send the items indicated below. (Minnesota residents add 6% sales tax. Sorry, no C.O.D. orders.)

Send ___ **Computer Desk(s)** Item H-1431-4963-005 at $59 each plus $9 each for shipping, handling.

Send ___ **Printer Table(s)** Item H-1431-4963-013 at $49 each plus $9 each for shipping, handling.

Send ___ **Posture Chair(s)** Item H-1431-8150-005 at $49 each plus $9 each for shipping, handling.

☐ My check or money order is enclosed. (No delays in processing orders paid by check, thanks to TeleCheck.)

Charge: ☐ VISA® ☐ MasterCard® ☐ American Express®

Acct. No. _____ Exp. ___/___

PLEASE PRINT CLEARLY

Name _____

Address _____

City _____

State _____ ZIP _____

Phone (___) _____

Sign Here _____

COMB COMB COMB COMB COMB COMB

similar to the Basic 2.0 DEF FN command, except that up to 35 values may be passed to a subroutine; only one value may be passed to a function.

When the SUB command is executed, it scans ahead in the program, looking for the SUBEND command, which will be described next. If SUBEND is not found, a syntax error occurs.

If SUBEND is found, the subroutine is initialized, and program execution is resumed at the line following SUBEND. The code between SUB and SUBEND is executed only when the subroutine is called with the CALLSUB command.

The variables enclosed by parentheses following the subroutine name are local variables, meaning that they are referenced only when the subroutine is executed. After the subroutine finishes executing, all local variables created by the subroutine are no longer accessible.

This allows you to use the same variable name twice—once within the subroutine and once outside the subroutine.

**SUBEND.** SUBEND is used to mark the end of a subroutine and is equivalent to the RETURN command used in Basic 2.0 subroutines. The guidelines for SUBEND are simple.

First, every SUB must have its corresponding SUBEND. Next, SUBEND must be the first command on its line. Finally, if the SUBEND command is preceded by colons or any other command, SUB will be unable to locate it, and a syntax error will occur.

The following sample program demonstrates the use of the SUB, CALLSUB and SUBEND commands:

```
10 SUB TEST (X,Y,A$)
20 PRINT "LINE 20
   X = "X;"Y = "Y;"A$ = ";A$
30 SUBEND
40 '
50 X = 5: Y = 5: A$ = "GLOBAL"
60 PRINT"LINE 60 X = "X;"Y = "Y;"A$ = ";A$
70 CALLSUB TEST(1,2,"LOCAL")
80 PRINT "LINE 80
   X = "X;"Y = "Y;"A$ = ";A$
```

In line 50, three global (normal) variables, X,Y,A$, have been assigned values. Three local variables with the same names are created by CALLSUB when it calls the subroutine TEST. The local variables are different variables and have different values from the global (normal) variables, but they share the same names!

How does this program execute? The SUB command is executed first, and it scans ahead looking for SUBEND, which it finds on line 30. It then initializes the subroutine TEST. This permits execution to resume on line 40. The code from lines 40 to 80 is executed normally.

The output appears as follows:

```
LINE 60  X = 5 Y = 5 A$ = GLOBAL
LINE 20  X = 1 Y = 2 A$ = LOCAL
LINE 80  X = 5 Y = 5 A$ = GLOBAL
```

This program demonstrates how global variables retain their assigned values, despite the fact that the local variables were assigned different values within the subroutine.

**EXIT.** This is used to terminate subroutine execution prematurely. It is the equivalent of the RETURN command. Like SUBEND, EXIT works only with named subroutines. See the subroutine C-CURVE in the demo program (Listing 3) for an example.


Circle 202 on Reader Service card.

## GREAT PRODUCTS FOR YOUR COMMODORE

*promenade* C1™

The Eprom Programmer. Thoughtfully designed, carefully constructed, the *promenade* C1™ is respected around the world for quality and value. The original software controlled programmer does away with personality modules and switches. Intelligent programming capability can cut programming time by 95%! With Disk Software ..... still just $99.50

**CAPTURE™**

Take control of your '64 or '128* with this easy to use cartridge. Lets you make a back-up disk of your memory-resident software. Your program is then fully accessible to you and your program can be re-booted from your disk 3-5 times faster. Or make an auto-starting cartridge using the *promenade* C1 and a CPR cartridge kit. Its magic!

**CAPTURE™** is a bargain at 39.95

**CARTRIDGE MATERIALS:**

CPR-3 - Three socket board, case and 3 eproms, for use with **CAPTURE™** ..... 29.95
PCC2 - Two 2732 (4K) or 2764 (8K) eproms. For '64 or '128 in 64 mode ..... 4.95
PCC4 - Four sockets for 2764, 27128 or 27256 (32K) eproms. Bank switching ..... 17.95
PCC8 - Like the PCC4 but twice the capacity. For multiple programs ..... 29.95
PRB4 - Four sockets, eprom & battery backed RAM combination ..... 24.95
PTM2 - Basic 128 mode cartridge board. Two 2764 or 27128 eproms ..... 5.95†
PTM4 - Four sockets, 27128 & 27256 eproms. 128 mode bank switcher ..... 19.95†
PCCH2 - Plastic case for above cartridges (except PCC8) ..... 2.25
Eproms - Always in stock at competitive prices.

†available June '86.
*when in 64 mode.

**EPROM ERASERS:**

Datarase - Hobbyist eprom eraser, 2 at a time, 3 to 10 minutes ..... 34.95
PE14 - Industrial quality eraser, 7 to 9 at a time ..... 79.95
Starter Set - **CAPTURE™,** *promenade* C1 and one CPR3 kit ..... 149.95
Deluxe Set - **CAPTURE™,** *promenade* C1, Datarase and two CPR3 kits ..... 199.95

**SHIPPING & HANDLING: USA - UPS SURFACE $3.00  FOREIGN (AIR MAIL ONLY) $13.00**

**JASON-RANHEIM**
1805 INDUSTRIAL DRIVE
AUBURN, CA USA 95603

TO ORDER TOLL FREE 800-421-7731
FROM CALIFORNIA 800-421-7748
TECHNICAL SUPPORT 916-823-3284
FROM OUTSIDE USA 916-823-3285
**MC, VISA, AMEX WELCOME**

# Tele-Communications Package

A complete package for several uses. One disk includes 64 Swifterm, 128 Swifterm and the War Games auto dialer. Three packages all for the price of one! **$19.95**

# GRAPHICS AND GAME DISK

A stimulating x-rated adventure game, complete with graphics representations. This is not your typical adventure game. FEATURES ANIMATED X-RATED CARTOONS

*Joystick required

**$24.95**

THE XXXXXXXXXX

# X-RATED GRAPHICS LIBRARY

***Your Print Shop May Never Be The Same!***

X-Rated Graphics guaranteed to spice up your special letterheads, greeting cards, signs and banners! Everything from mild to Look Out Nelly! 60 Erotic additions to heat up your print shop graphics library, plus 5 ribald Screen Magic additions!

Print Shop is a trademark of Broderbund

**$24.95**

# 1541 M.A.S.H.

Now you can service your own 1541 disk drive using 1541 M.A.S.H. Save big bucks on repair bills. Rate the performance of your drive. Test and adjust RPM's. Test and adjust head alignment. Step by step instructions that anyone can follow. Pays for itself the first time you use it to adjust a misbehaving drive. No knowledge of electronics is necessary. All you needs is a screwdriver and 20 minutes.

**NOW ONLY $19.95**

# MAGNUM LOAD

**MAGNUM LOAD** is a new replacement KERNAL (operating system) ROM chip for your Commodor 65 or 128 computer that will load and verify programs up to 6 times faster than before. The tape routines have been removed from the old chip and in their place have been put a high-speed loader, high-speed verify, and disk driver no-head-rattle routine. Unlike the older cartridge fast loaders, no ports are tied up at the rear of the computer, the screen is not blanked during loading and there is no wear-and-tear on the expansion port. For maximum convenience and performance, the chips installed directly in the circuit board. Generally a socket has already been provided to make the operation easy, but occasionally some soldering may be required. Now you can give your 1541 disk drive "1571 speed."

Rather than give you more exagerated claims about how many times faster our ROM chip is compared to the slower cartridge versions, a comparison chart is supplied listing MEASURED loading times.

*Programed by Jim Drew*

| Program | Star-Dos | Reg. Load | Mach 5 | Fast Load | MAGNUM LOAD |
|---|---|---|---|---|---|
| Pitstop II | ? | 144 sec. | 43 sec. | 41 sec. | **31 sec.** |
| Music Shop | ? | 105 sec. | 105 sec.* | 105* | **21 sec.** |
| Hitchhiker's Guide to the Galaxy | ? | 70 sec. | 70 sec.* | N.G.** | **68 sec.** |
| On-field Football | ? | 149 sec. | 66 sec. | 63 sec. | **56 sec.** |
| EASY FINANCE I | ? | 58 sec. | 13 sec. | 13 sec. | **11 sec.** |

**$24.95**

For 1541 or MSD Version

*Will not fast load - defaulted back to regular load

**Failed to load at all

# KEY MASTER

**One of the easiest-to-use, most powerful disk backup programs ever written for the 64. Working with the 1541 or the 1571 KEYMASTER is like getting two copy programs for the price of one. Its main feature comes with 50 keys that unlocks protected disks by ELIMINATING the protection scheme originally written on the disk.**

**Once one of the KEYMASTER'S KEYS has unlocked a disk, the program can generally be FILED COPIED** onto another disk (also making the program compatible with non-1541 drives.)

In addition to the UNLOCKING KIT it contains a powerful yet easy to use general purpose copier for the programs not listed as a key.

- **ith One 1541:**
  - **FAST** FILE COPIER - up to 5 times faster!
  - **FAST** full protected - disk GCR nibble copier works in only 75 seconds
  - **FAST** full unprotected - disk copier
  - **FAST** 10 second disk formatter

Wirth Two 1541's:

- **FAST** file copier - up to 6 times faster!
- **FAST** full protected - disk GCR nibble copier works in only 37 seconds!
- **FAST** full unprotected - disk copier

- **50 KEYS** for popular programs will be provided on the first KEYMASTER disk. Frequent updates of 25 to 50 additional KEYS will be available periodically. (No original disk return required for updates!)

ALL OF THIS AT THE RIGHT PRICE! ONLY —

$10.00 for update disks

**$29.95**

# GRAPHIC LABEL MAKER

Give your labels the professional touch. With Hi Rez Graphics make your own design or use one our 60 premade labels with easy to use on screen editor. You can insert up to three lines of text then choose the picture you want to put on the left hand side of the label. Then you can print out as many labels as you want. This has got to be the neatest label program out there.

**Now works with Print Shop*

**Also available — the x-rated Graphic package for the 64 and your print shop. There's 60 Hi Rex pictures.*

**$24.95**

# D-CODER

- Translates any machine language program into easy-to-read English descriptions with complete explanations of each command.
- Makes complete notations of all important memory locations accessed by the program (SID, VIC, MOS, KERNAL, etc.)
- Gives you three ways of accessing programs:
  1. **Will read and list programs from DISK**
  2. **Will read and list programs from MEMORY**
  3. **Direct user input (from magazines, etc.)**
- Can be used to locate and examine any machine language program's protection routines!
- Can be used to easily break apart machine language programs for study and examination!
- Printer option for complete hard copy listings!

**You no longer need to be an EGGHEAD to read Machine Language.**

**$19.95**

# N-CODER

## THE PERFECT COMPANION PROGRAM TO D-CODER!

**Allows you to easily make changes in machine language programs . . . right on the disk!**

- Rewrite ability allows code to be altered and then rewritten directly to the disk!
- Features sector-by-sector scrolling assembly language display of machine language programs!
- Notation of ASCII text equivalents for easy spotting of embedded text strings!
- Handy reference display of all assembly language commands and their ML numerical equivalents!
- Byte splitter for easy splitting of decimal addresses into low byte-high byte format!

**$19.95**

# WANTED: PROGRAM SUBMISSIONS

Megasoft is currently seeking quality program submissions for marketing on a national scale. We pay good royalties and can work several options. If you feel that you have something of interest, call (206) 687-7176 for more information. Unique utilities and hardware devices a plus.

# PHOTOCOPY

PHOTOCOPY is a graphics integration program which lets you create NEWSROOM photos and banners from other graphics programs. Files also can be converted from NEWSROOM to PRINTSHOP. Photocopy is an idea enhancement to NEWSROOM giving you the versatility to increase your graphics library.

- Photocopy will convert NEWSROOM photos to PRINTSHOP
- Phtocopy works with a variety of files "DOODLE, FLEXIDRAW, PRINTSHOP, SCREEN MAGIC, GRAPHICS BASIC, COMPUTER-EYES".
- Photocopy will convert a NEWSROOM photo or banner to a PRINTSHOP graphic.
- Photocopy works with the 1541, 1571 and the Indus drives.

**$19.95**

Newsroom, Doodle, Printship, Flexidraw, and Graphics Basic are trademarks of Springboard Software, City Software, Broderbund Software, Inkwell Systems, and Hesware respectively.

**Dealer and Distributor Inquires Invited.**

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery.

VISA

MasterCard

**Programs for C-64/128** **$3.00 S & H on all orders**

**Software Submissions Invited**

To place your order by phone **Call (705) 746-8081.**

**(206) 687-7176** or in **Canada call**

For Mail Orders:

**MegaSoft** LTD

P.O. Box 1080
Battle Ground, WA 98604

or in Canada:

**MegaSoft Canada** LTD
P.O. Box 10
Parry Sound, Ontario 92A 1P8

**LOCAL**. This is used to create local variables in addition to those CALL-SUB has created and passed values to. LOCAL should only be used within a named subroutine. Sample RUN Basic line:

```
LOCAL A,B,FF%,QQ$
```

### *Tech Talk*

RUN Basic works by using the C-64's RAM in a variety of ways. The RAM under the Basic ROM is used for storage of variables. A graphics bit map uses the RAM under the Kernal ROM. RUN Basic's turtle graphics commands for color memory use the RAM at addresses 49152 to 50176. Free RAM exists from locations 50177 to 53247 for other uses such as sprite storage.

To see a demonstration of RUN Basic's turtle graphics and structured programming commands, type in Listing 3. Be sure to save it before running it. You'll be impressed with the speed of RUN Basic's turtle graphics, compared to other turtle graphics programs.

### *Typing in RUN Basic*

Use the following step-by-step procedure to type in RUN Basic.

First, make sure you have a copy of Basic 4.5 on disk. If you don't already have Basic 4.5, refer to the 1985 ReRUN Productivity Pak or *RUN*'s June, July and August 1985 issues.

Type in the machine language listing of RUN Basic using ML Perfect Typist (see the March 1986 issue of *RUN*, p. 97) and save it on the same disk with the name "Object". Next, type in and save the Patch program (Listing 2).

Next, load and run the Patch program while the disk with Object and Basic 4.5 is in the drive. The Patch program will create RUN Basic by combining Basic 4.5 and the Object program. After the RUN Basic title screen appears, you must save RUN Basic with the following command:

```
BSAVE"RUN Basic 1.0",P$7000 to P$A000
```

Use this new version for your future programming and just set aside Basic 4.5.

To load RUN Basic 1.0 from disk, just execute:

```
LOAD "0:RUN BASIC 1.0",8,1
```

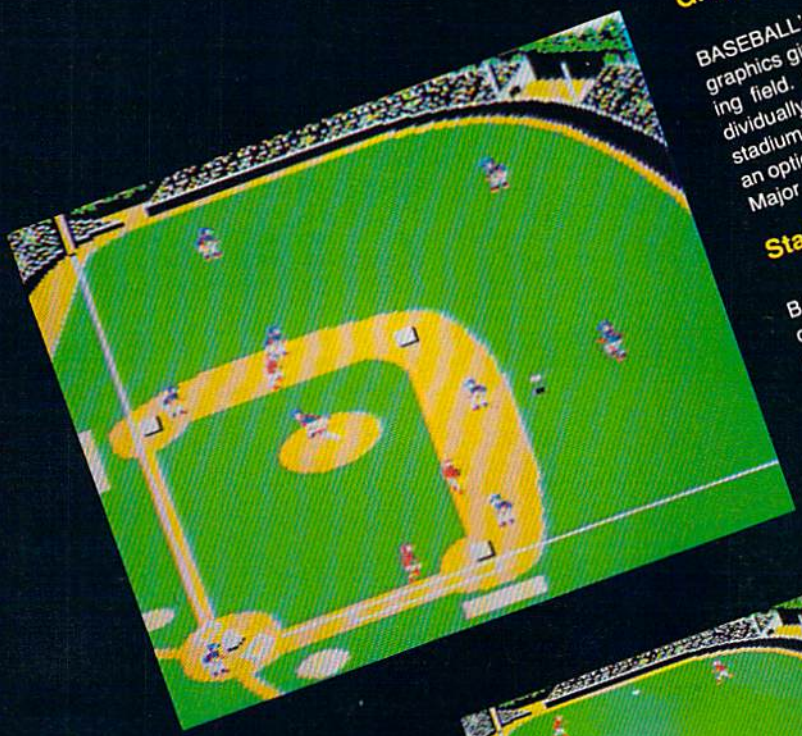
Once the program loads, enter SYS64738 and press the return key to start it.

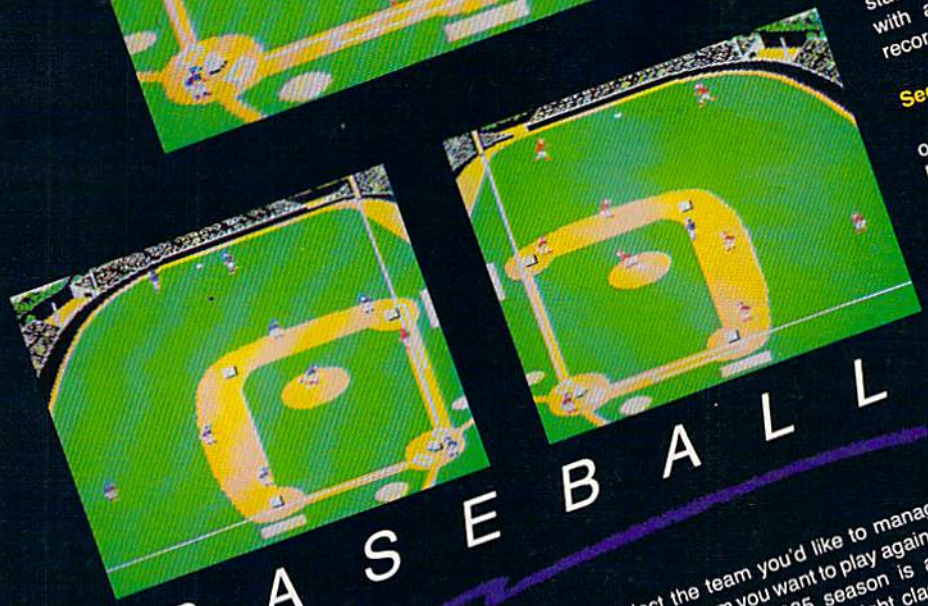
RUN Basic will also work on cassette. For cassette instructions, send me your request with a self-addressed envelope and 50 cents to cover my Canadian postage costs. R

*Address all author correspondence to Robert Rockefeller, R.R. #4, Langton, Ontario, Canada N0E 1G0.*

## Listing 1. *RUN Basic ML object code.*

```
0001 00 70 48 49 52 45 D3 4D 45 44 52 94 03
0002 45 D3 54 45 58 D4 47 43 4C D2 50 D7 04
0003 45 CE 50 4C 4F D4 44 4F 57 CE 55 E2 04
0004 D0 41 48 45 41 C4 42 41 43 CB 4D 85 04
0005 4F 56 58 D9 4D 4F 56 D9 4D 4F 56 98 04
0006 D8 54 55 52 4E 54 CF 4C 45 46 D4 F5 04
0007 52 49 47 48 D4 50 55 54 43 48 41 CA 03
0008 D2 48 4F 4D C5 53 55 42 45 4E C4 C4 04
0009 53 55 C2 43 41 4C 4C 53 55 C2 45 3E 04
0010 58 49 D4 4C 4F 43 41 CC 4D 45 52 4E 04
0011 47 C5 45 58 45 C3 00 00 00 00 00 BC 02
0012 00 00 00 00 00 00 00 00 00 00 00 0C 00
0013 00 00 00 00 00 00 00 00 00 00 00 0D 00
0014 00 00 00 00 00 00 00 00 00 00 00 0E 00
0015 00 00 00 00 00 00 00 00 00 00 00 0F 00
0016 00 00 00 00 00 00 00 00 00 00 00 10 00
0017 00 00 00 00 00 00 00 00 00 00 00 11 00
0018 00 00 00 00 00 00 00 00 00 00 00 12 00
0019 00 00 00 00 00 00 00 00 00 00 00 13 00
0020 00 00 00 00 00 00 00 00 00 00 00 14 00
0021 00 00 00 00 00 00 00 00 00 00 00 15 00
0022 00 00 00 00 00 00 00 00 00 00 00 16 00
0023 00 00 58 50 4F D3 59 50 4F D3 48 F4 03
0024 45 41 44 49 4E C7 43 4F 4F 52 44 B7 03
0025 D3 52 50 49 D8 44 41 54 43 4F 4C 66 04
0026 CC 4D 43 4F 4C CC 00 00 00 00 00 DD 02
0027 00 00 00 00 00 00 00 00 00 00 00 1B 00
0028 00 00 00 00 00 00 00 00 00 00 00 1C 00
0029 00 00 00 00 00 00 00 00 00 00 00 1D 00
0030 00 00 00 00 00 00 00 00 00 00 00 1E 00
0031 00 00 00 00 00 00 00 00 00 00 00 1F 00
0032 00 00 00 00 00 00 00 00 00 00 00 20 00
0033 00 00 00 00 00 00 00 00 00 00 00 21 00
0034 00 00 00 00 00 00 00 00 00 00 00 22 00
0035 00 00 00 00 00 00 00 00 00 00 00 23 00
0036 00 00 00 00 00 00 00 00 00 00 00 24 00
0037 00 00 00 00 00 00 00 F7 74 39 75 3E 02
0038 76 74 B3 74 49 7A 6A 7A 07 AF 07 9B 04
0039 AF 6B 77 B9 77 4B 78 19 78 E7 77 9A 05
0040 50 79 8E 7A 9B 7A A7 7A D3 7B CA 47 06
0041 7E BB 7C 26 7E CA 7E 26 7F 61 8C 5C 05
0042 D8 8B 00 00 00 00 00 00 00 00 00 8D 01
0043 00 00 00 00 00 00 00 00 00 00 00 2B 00
0044 00 00 00 00 00 00 00 00 00 00 00 2C 00
0045 00 00 00 00 00 00 00 00 00 00 00 2D 00
0046 00 00 00 00 00 00 00 00 00 00 00 2E 00
0047 00 00 00 00 00 00 00 57 7B 60 7B DC 01
0048 69 7B AD 79 A7 7B EB 7B F1 7B 00 2E 06
0049 00 00 00 00 00 00 00 00 00 00 00 31 00
0050 00 00 00 00 00 00 00 00 00 00 00 32 00
0051 00 00 00 00 00 00 00 00 00 00 00 33 00
0052 00 00 00 00 00 00 00 00 00 00 00 34 00
0053 00 00 00 00 00 00 00 00 00 00 00 35 00
0054 00 00 00 00 20 8A AD 20 F7 B7 4C A7 03
0055 58 72 20 8A AD 20 BF B1 A5 65 85 77 05
0056 14 A4 64 84 15 60 00 A6 7A A0 04 11 04
0057 84 0F BD 00 02 10 0A C9 FF D0 03 40 04
0058 4C D6 72 E8 D0 F1 C9 20 F0 F6 85 CB 07
0059 08 C9 22 D0 03 4C 01 73 24 0F 70 64 03
0060 E9 C9 3F D0 04 A9 99 D0 46 C9 30 52 06
0061 90 04 C9 3C 90 3E 20 81 73 C8 E8 68 05
0062 BD 00 02 38 F9 9E A0 F0 F5 C9 80 9A 06
0063 D0 04 05 0B D0 26 A6 7A E6 0B C8 F2 04
0064 B9 9D A0 10 FA B9 9E A0 D0 E0 20 07 07
0065 85 73 C8 E8 BD 00 02 38 F9 09 80 62 05
0066 F0 F5 C9 80 D0 39 05 0B 18 69 4C 56 05
0067 A4 71 E8 C8 99 FB 01 B9 FB 01 D0 22 07
0068 03 4C 77 73 38 E9 3A F0 04 C9 49 DE 04
0069 D0 02 85 0F 38 E9 55 F0 03 4C 68 C8 04
0070 72 85 08 BD 00 02 F0 D9 C5 08 F0 8A 05
0071 D5 C8 99 FB 01 E8 D0 F0 A6 7A E6 27 08
0072 0B C8 B9 08 80 10 FA B9 09 80 D0 78 05
0073 AB 20 85 73 C8 E8 BD 00 02 38 F9 AC 05
0074 F2 70 F0 F5 C9 80 D0 11 A9 DE A4 E6 07
0075 71 C8 99 FB 01 84 71 A5 0B 18 69 3F 05
0076 02 D0 9A A6 7A E6 0B C8 B9 F1 70 AB 06
0077 10 FA B9 F2 70 D0 D3 20 85 73 C8 F5 06
0078 E8 BD 00 02 38 F9 00 70 F0 F5 C9 44 06
0079 80 D0 05 A9 DF 4C 2B 73 A6 7A E6 1C 06
0080 0B C8 B9 FF 6F 10 FA B9 00 70 D0 4D 06
0081 DF BD 00 02 30 03 4C D4 72 99 FD 4A 05
0082 01 C6 7B A9 FF 85 7A 60 86 7A 84 1F 06
0083 71 A0 00 84 0B 88 A6 7A CA 60 84 49 05
```





# BASEBALL

From the author of FOOTBALL comes an incredibly sophisticated, realistic and complete statistical baseball simulation for one or two players. Game play, manager's functions, graphics, and a statistical library establish BASEBALL as the ultimate sports simulation program.

## Game Play

BASEBALL's underlying statistical framework simulates the realities of baseball like never before. Within this framework, the program considers each player's batting statistics against both left-handed and right-handed pitchers, and pitchers statistics vs. left- and right-handed batters. Every player's fielding and base-running abilities are also considered (an important factor when attempting to steal a base, etc.).

Select the team you'd like to manage, then pick the team you want to play against. Every team from the 1985 season is accurately represented, along with eight classic teams from the past. Determine your starting lineup, designate a starting pitcher, and make player substitutions when necessary. You call the plays, offense and defense. In a one-player game, your computer opponent displays uncanny intelligence in reacting to your managing decisions.

## Manager's Functions

Built-in manager's functions provide extra versatility. You can trade team players, draft new players, create your own team, even form your own league. The program's stat-tracker keeps track of your team's season statistics and individual player year-to-date stats.

## Graphics

BASEBALL's highly-detailed animated graphics give you a perfect view of the playing field. Each player acts and moves individually on every play. Three different stadiums are included with the program, and an optional Stadium Disk lets you play in any Major League stadium in the United States.

## Statistics

BASEBALL can maintain a complete statistical record of each team player's performance. All player stats and game Box Scores can be displayed on the screen or sent to an external printer for a hardcopy printout.

BASEBALL also includes a unique Auto-Play option that lets the computer play a complete game in less than three minutes. A whole series of games can be played unattended, and an entire season of player and team statistics can be compiled over several days with all game stats printed out for your records.

## See Your Dealer. . .

or write or call for more information. BASEBALL is available on disk for the Commodore 64 and Commodore 128 computers. For direct orders please enclose $49.95 plus $2.00 for shipping and specify UPS or first class mail delivery. Visa, MasterCard, American Express, and Diners Club cards accepted.

Commodore 64 and Commodore 128 are trademarks of Commodore ELectronics, Ltd.

MAJOR LEAGUE BASEBALL PLAYERS MLB

© 1986 MLBPA

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995
Order Line: (800) 637-4983
(except in Illinois, Alaska, and Hawaii)

*Listing 1 continued.*

```
0084 49 10 0E C9 FF F0 0A 24 0F 30 06 E6 03
0085 20 A3 73 4C 42 86 4C 3F 86 C9 DE 57 05
0086 F0 37 C9 DF F0 40 C9 CC B0 26 A2 62 07
0087 9E A0 A0 86 35 84 36 29 7F AA A0 9C 05
0088 FF CA 30 07 C8 B1 35 10 FB 30 F6 37 06
0089 C8 B1 35 08 29 7F 20 47 AB 28 10 01 04
0090 F4 A4 49 60 A2 09 A0 80 38 E9 4C D3 05
0091 D0 D5 20 F4 73 A2 F2 A0 70 38 E9 4C 07
0092 02 4C B3 73 20 F4 73 A2 00 A0 70 09 05
0093 D0 F1 C8 E6 49 B1 5F 60 C9 02 90 E0 06
0094 13 C9 1C B0 0F E9 01 0A A8 B9 92 FC 04
0095 71 48 B9 91 71 48 4C 73 00 4C 08 2E 04
0096 AF C9 FF D0 03 4C 9E AE C9 DE F0 D9 07
0097 03 4C AD AE 20 73 00 C9 02 90 13 0C 04
0098 C9 09 B0 0F E9 01 0A A8 B9 00 72 BA 04
0099 48 B9 FF 71 48 4C 73 00 4C 08 AF DE 04
0100 00 00 00 00 00 00 00 00 00 00 00 64 00
0101 00 00 00 00 00 00 00 00 00 00 00 65 00
0102 00 00 00 00 00 00 00 00 00 00 00 66 00
0103 00 00 00 00 00 00 00 00 00 00 00 67 00
0104 00 00 00 00 00 00 00 00 00 00 00 68 00
0105 D0 A9 04 8D 88 02 A9 1B 8D 11 D0 2F 05
0106 A9 17 8D 18 D0 AD 00 DD 09 03 8D C2 04
0107 00 DD A9 C8 8D 16 D0 A9 FF 8D 41 A2 06
0108 74 60 86 22 84 23 A0 00 CC 47 74 B6 04
0109 D0 06 CE 48 74 10 01 60 91 22 C8 B9 04
0110 D0 F0 E6 23 4C 9F 74 A9 40 8D 47 53 06
0111 74 A9 1F 8D 48 74 A9 00 AA A0 E0 C7 05
0112 20 99 74 A9 E8 8D 47 74 A9 03 8D AF 05
0113 48 74 AD 45 74 A2 00 A0 D8 20 99 66 05
0114 74 A9 E8 8D 47 74 A9 03 8D 48 74 B4 05
0115 AD 43 74 0D 44 74 A2 00 A0 C0 20 BE 04
0116 99 74 AD 42 74 8D 21 D0 60 20 9E 80 05
0117 B7 8E 44 74 20 FD AE 20 9E B7 8A 3C 06
0118 0A 0A 0A 0A 8D 43 74 AD 21 D0 8D 0D 04
0119 42 74 AD 86 02 8D 45 74 A9 08 8D E6 04
0120 18 D0 A9 3B 8D 11 D0 AD 00 DD 29 65 05
0121 FC 8D 00 DD A9 00 8D 40 74 A9 FF 71 06
0122 8D 41 74 A9 C8 8D 16 D0 60 20 9E BE 05
0123 B7 8E 21 D0 8E 42 74 20 FD AE 20 E0 05
0124 9E B7 8A 0A 0A 0A 0A 8D 43 74 20 E7 03
0125 FD AE 20 9E B7 8E 44 74 20 FD AE AE 06
0126 20 9E B7 8E 45 74 20 18 75 A9 D8 68 05
0127 8D 16 D0 A9 FF 8D 40 74 60 00 E0 1B 06
0128 40 E1 80 E2 C0 E3 00 E5 40 E6 80 31 07
0129 E7 C0 E8 00 EA 40 EB 80 EC C0 ED 3E 08
0130 00 EF 40 F0 80 F1 C0 F2 00 F4 40 F8 06
0131 F5 80 F6 C0 F7 00 F9 40 FA 80 FB 53 08
0132 C0 FC 00 FE 00 C0 28 C0 50 C0 78 6E 06
0133 C0 A0 C0 C8 C0 F0 C0 18 C1 40 C1 B7 07
0134 68 C1 90 C1 B8 C1 E0 C1 08 C2 30 14 07
0135 C2 58 C2 80 C2 A8 C2 D0 C2 F8 C2 5B 08
0136 20 C3 48 C3 70 C3 98 C3 C0 C3 80 07 07
0137 40 20 10 08 04 02 01 C0 C0 30 30 E8 02
0138 0C 0C 03 03 00 55 AA FF A9 C7 38 4E 04
0139 ED 61 74 8D 61 74 AD 5F 74 29 07 5F 05
0140 8D 4E 74 AD 60 74 48 AD 5F 74 29 4D 05
0141 F8 8D 5F 74 AD 61 74 4A 4A 29 FE 22 06
0142 A8 AD 61 74 29 07 18 79 71 75 6D CC 04
0143 5F 74 90 04 EE 60 74 18 85 BB B9 C9 05
0144 72 75 6D 60 74 85 BC 68 6A AD 5F D7 05
0145 74 6A 4A 4A 18 79 A3 75 85 AE B9 98 05
0146 A4 75 69 00 85 AF 60 AD 62 74 F0 1B 06
0147 01 60 AD 61 74 C9 C8 B0 F8 AD 60 BC 06
0148 74 29 FE D0 F1 AD 60 74 F0 07 AD 15 07
0149 5F 74 29 C0 D0 E5 20 E9 75 AE 4E 80 06
0150 74 AD 46 74 29 03 A8 AD 40 74 D0 76 05
0151 0C 98 F0 03 BD D5 75 8D 4E 74 4C D0 05
0152 89 76 B9 E5 75 3D DD 75 8D 4E 74 88 06
0153 BD DD 75 49 FF A0 00 48 78 A9 35 2E 06
0154 85 01 68 31 BB 0D 4E 74 91 BB A9 38 05
0155 37 85 01 58 AD 43 74 0D 44 74 91 6A 04
0156 AE AD 40 74 F0 0D A5 AF 29 03 09 31 05
0157 D8 85 AF AD 45 74 91 AE 60 AD 41 9C 06
0158 74 D0 01 60 AD 47 74 D0 05 CE 48 96 05
0159 74 30 F5 CE 47 74 AD 4F 74 18 6D B6 05
0160 57 74 8D 57 74 AD 50 74 6D 58 74 6D 05
0161 8D 58 74 AD 51 74 6D 59 74 8D 5F 92 05
0162 74 8D 59 74 AD 52 74 6D 5A 74 8D AB 05
0163 60 74 8D 5A 74 AD 53 74 18 6D 5B 26 05
0164 74 8D 5B 74 AD 54 74 6D 5C 74 8D B3 05
0165 5C 74 AD 55 74 6D 5D 74 8D 61 74 8B 05
0166 8D 5D 74 AD 56 74 6D 5E 74 8D 62 A9 05
0167 74 8D 5E 74 AD 3F 74 F0 03 20 40 2D 05
0168 76 4C C1 76 A9 00 A8 38 ED 4F 74 DA 05
0169 8D 4F 74 98 ED 50 74 8D 50 74 98 2B 06
0170 ED 51 74 8D 51 74 98 ED 52 74 8D 86 06
0171 52 74 98 38 ED 53 74 8D 53 74 98 E1 05
0172 ED 54 74 8D 54 74 98 ED 55 74 8D 91 06
0173 55 74 98 ED 56 74 8D 56 74 60 20 9C 05
0174 52 72 A5 14 8D 47 74 A5 15 8D 48 02 05
0175 74 10 0F 20 A3 77 20 2F 77 20 BB 1D 04
0176 76 20 2F 77 4C 8D 77 20 BB 76 AD 3A 05
0177 49 74 F0 10 A0 07 B9 67 74 99 4F 91 05
0178 74 88 10 F7 A9 00 8D 49 74 60 AD B5 05
0179 48 74 10 11 38 A9 00 ED 47 74 8D A6 04
0180 47 74 A9 00 ED 48 74 8D 48 74 60 6A 05
0181 20 8A AD A5 66 49 FF 85 66 20 55 BF 05
0182 72 4C 6F 77 A0 07 B9 4F 74 99 67 7D 05
0183 74 88 10 F7 A0 03 A9 00 60 A9 80 8F 05
0184 8D 57 74 8D 58 74 8D 5B 74 8D 5C AE 05
0185 74 60 20 52 72 20 C9 77 99 53 74 31 05
0186 88 10 FA 8D 4F 74 8D 50 74 8D 52 CC 05
0187 74 A9 01 8D 51 74 8D 49 74 38 A5 52 05
0188 14 ED 59 74 85 14 A5 15 ED 5A 74 98 05
0189 85 15 20 D9 77 4C 6F 77 20 52 72 DD 04
0190 20 C9 77 99 4F 74 88 10 FA 8D 53 EC 05
0191 74 8D 54 74 8D 56 74 A9 01 8D 55 6B 05
0192 74 8D 49 74 38 A5 14 ED 5D 74 85 B2 05
0193 14 A5 15 ED 5E 74 85 15 20 D9 77 58 05
0194 4C 6F 77 20 52 72 20 FD AE 38 A5 80 05
0195 14 8D 5F 74 ED 59 74 8D 6F 74 8D EE 05
0196 63 74 A5 15 8D 60 74 ED 5A 74 8D FE 05
0197 70 74 8D 64 74 0D 63 74 D0 03 4C 11 05
0198 1A 78 AD 64 74 10 11 A9 00 38 ED CC 04
0199 63 74 8D 63 74 A9 00 ED 64 74 8D FD 05
0200 64 74 20 52 72 38 A5 14 ED 5D 74 33 05
0201 8D 71 74 8D 65 74 A5 15 ED 5E 74 1A 06
0202 8D 72 74 8D 66 74 0D 65 74 D0 0D 67 05
0203 AD 5F 74 85 14 AD 60 74 85 15 4C 4B 05
0204 EB 77 AD 66 74 10 11 A9 00 38 ED A4 05
0205 65 74 8D 65 74 A9 00 ED 66 74 8D 09 06
0206 66 74 38 A0 00 AD 63 74 ED 65 74 CA 05
0207 AD 64 74 ED 66 74 B0 02 A0 02 8C FB 05
0208 73 74 20 C9 77 A0 00 20 07 79 A0 F7 04
0209 02 20 07 79 A9 01 8D 49 74 AC 73 86 04
0210 74 B9 63 74 85 14 B9 64 74 85 15 9A 05
0211 4C 6F 77 8C 74 74 AE 74 74 BD 6F 3B 06
0212 74 A8 BD 70 74 20 91 B3 20 0C BC DD 05
0213 AE 73 74 BD 63 74 A8 BD 64 74 20 5B 06
0214 91 B3 A5 66 45 6E 85 6F A5 61 20 F2 05
0215 12 BB 20 49 79 20 9B BC AD 74 74 92 05
0216 0A A8 A2 04 B5 61 99 4F 74 C8 CA 34 06
0217 D0 F7 60 A5 61 18 69 10 85 61 60 DD 05
0218 20 8A AD A2 4A A0 74 20 D4 BB A2 82 06
0219 19 A0 00 20 D4 BB 20 64 E2 20 7E 47 05
0220 79 20 84 79 A9 19 A0 00 20 A2 BB 51 05
0221 20 6B E2 20 7E 79 20 87 79 4C D9 A6 05
0222 77 20 49 79 4C 9B BC A0 00 2C A0 46 05
0223 04 A2 04 B5 61 99 4F 74 C8 CA D0 5D 06
0224 F7 60 A2 00 A0 02 2C A0 06 A5 14 06 05
0225 38 F9 57 74 9D 6F 74 A5 15 F9 58 68 06
0226 74 9D 70 74 60 20 FA AE 20 52 72 E3 05
0227 20 95 79 20 FD AE 20 52 72 20 F7 D7 05
0228 AE A2 02 20 9A 79 AD 6F 74 0D 70 76 05
0229 74 D0 18 AD 72 74 30 05 0D 71 74 FB 04
0230 D0 07 A9 33 A0 7A 4C A2 BB A9 38 3D 06
0231 A0 7A 4C A2 BB AD 71 74 0D 72 74 2F 06
0232 D0 16 AD 70 74 30 05 0D 6F 74 D0 54 05
0233 07 A9 A8 A0 AE 4C A2 BB A9 00 85 66 06
0234 61 60 AD 72 74 AC 71 74 20 91 B3 33 06
```

→

Circle 8 on Reader Service card.

# REQUIRED READING

## for the Commodore 128™

Detailed guide presents the 128's operating system, explains graphic chips, Memory Management Unit, 80 column graphics and commented ROM listings. **500pp $19.95**

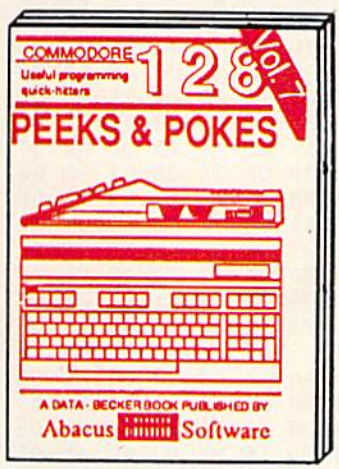
Get all the inside information on BASIC 7.0. This exhaustive handbook is complete with commented BASIC 7.0 ROM listings. Coming Summer '86. **$19.95**

Filled with info for everyone. Covers 80 column hi-res graphics, windowing, memory layout, Kernal routines, sprites, software protection, autostarting. **300pp $19.95**

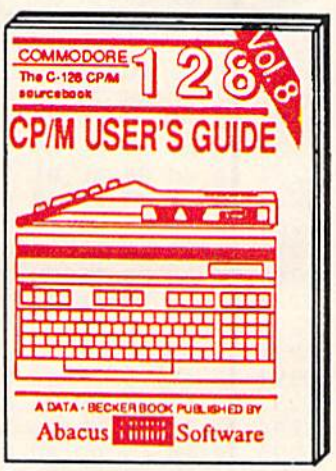
Insiders' guide for novice & advanced users. Covers sequential & relative files, & direct access commands. Describes DOS routines. Commented listings. **$19.95**

Learn fundamentals of CAD while developing your own system. Design objects on your screen to dump to a printer. Includes listings for '64 with Simon's Basic. **300pp $19.95**

Introduction to programing; problem analysis; thorough description of all BASIC commands with hundreds of examples; monitor commands; utilities; much more. **$16.95**




Presents dozens of programming quick-hitters. Easy and useful techniques on the operating system, stacks, zero-page, pointers, the BASIC interpreter and more. **$16.95**




Essential guide for everyone interested in CP/M on the 128. Simple explanation of the operating system, memory usage, CP/M utility programs, submit files & more. **$19.95**

Commodore 128™ is a trademark of Commodore Electronics, Ltd.

# Abacus Software

**P.O. Box 7219 Dept. RA Grand Rapids, MI 49510 - Telex 709-101 - Phone (616) 241-5510**

Optional diskettes available for all book titles - $14.95 each. Other books & software also available. Call for the name of your nearest dealer. Or order directly from ABACUS using your MC, Visa or Amex card. Add $4.00 per order for shipping. Foreign orders add $10.00 per book. Call now or write for your **free** catalog. Dealer inquires welcome--over 1400 dealers nationwide.

*Listing 1 continued.*

```
0235 20 0C BC AD 70 74 AC 6F 74 20 91 A4 05
0236 B3 A5 6E 45 66 85 6F A5 61 20 12 89 05
0237 BB 20 01 E3 AD 70 74 10 07 A9 A8 A5 05
0238 A0 AE 20 67 B8 60 81 C9 0F DA A1 AF 06
0239 81 49 0F DA A1 A9 00 85 70 85 66 CC 05
0240 85 64 85 65 85 0D 60 C9 DF D0 0B 38 06
0241 20 73 00 C9 09 F0 0B C9 08 F0 0A 1C 05
0242 20 9E B7 8E 46 74 60 A9 00 2C A9 8D 05
0243 FF 8D 3F 74 4C 73 00 20 9E B7 8A F0 05
0244 29 03 8D 46 74 20 FD AE 20 52 72 16 05
0245 8D 5F 74 8C 60 74 20 FD AE 20 52 F2 05
0246 72 8D 61 74 8C 62 74 4C 40 76 20 4E 05
0247 8A AD A9 4A A0 74 20 67 B8 4C 54 14 06
0248 79 20 8A AD A9 FF 45 66 85 66 4C 52 06
0249 92 7A 20 9E B7 86 22 AD 3F 74 48 CA 05
0250 AD 46 74 48 A9 00 85 23 A0 03 06 A3 04
0251 22 26 23 88 D0 F9 AD 75 74 18 65 CA 05
0252 22 85 22 AD 76 74 65 23 85 23 78 04 05
0253 A9 33 85 01 B1 22 99 68 00 C8 C0 BB 05
0254 08 90 F6 A9 37 85 01 58 AD 5D 74 C8 05
0255 85 64 AD 5E 74 85 65 AD 59 74 85 50 06
0256 62 AD 5A 74 85 63 AD 40 74 48 A9 17 06
0257 00 8D 40 74 85 25 88 84 24 A6 25 E7 04
0258 16 68 A9 00 90 02 A9 01 8D 46 74 AC 04
0259 A0 03 B9 62 00 99 5F 74 88 10 F7 BC 05
0260 20 40 76 E6 62 D0 02 E6 63 C6 24 27 06
0261 10 DB A9 07 85 24 A5 62 38 E9 08 79 05
0262 85 62 B0 02 C6 63 A5 64 D0 02 C6 69 06
0263 65 C6 64 E6 25 A5 25 C9 08 90 BC 88 06
0264 68 8D 40 74 68 8D 46 74 68 8D 3F 94 05
0265 74 60 AC 59 74 AD 5A 74 4C 91 B3 61 06
0266 AC 5D 74 AD 5E 74 4C 91 B3 A9 4A 89 06
0267 A0 74 4C A2 BB 20 E9 75 78 A9 35 9C 06
0268 85 01 AE 4E 74 AD 40 74 D0 05 BD F5 05
0269 D5 75 D0 03 BD DD 75 A0 00 31 BB C5 06
0270 AA A9 37 85 01 58 AD 40 74 D0 06 AD 05
0271 8A F0 02 A9 01 60 8A C9 04 90 FA 76 06
0272 4A 4A 4C 9F 7B 20 B1 7B 20 71 7B 62 05
0273 4C 3C BC 20 FA AE 20 52 72 8D 5F ED 05
0274 74 8C 60 74 20 FD AE 20 52 72 8D 22 06
0275 61 74 8C 62 74 4C F7 AE 31 36 30 D2 05
0276 2C 31 30 30 00 A5 7A 48 A5 7B 48 A0 04
0277 A9 CC 85 7A A9 7B 85 7B 20 4C 78 91 06
0278 68 85 7B 68 85 7A 60 AD 1F D0 4C 2D 06
0279 3C BC AD 1E D0 4C 3C BC DF 00 00 CD 05
0280 00 00 40 00 00 00 00 00 A9 DF 20 00 03
0281 17 7C E6 7A D0 02 E6 7B A0 00 B1 90 06
0282 7A C9 14 D0 ED 60 85 C3 20 09 A9 A8 06
0283 2C A0 FF C8 B1 7A AA C8 11 7A D0 A6 07
0284 03 4C 08 AF B1 7A 48 C8 C8 C8 B1 9E 06
0285 7A C5 C3 D0 0C 68 98 18 65 7A 85 77 06
0286 7A 90 02 E6 7B 60 8A 85 7A 68 85 61 06
0287 7B D0 D2 A5 2D A6 2E 86 60 85 5F AC 06
0288 E4 30 D0 05 C5 2F 90 01 60 A0 00 8E 05
0289 B1 5F D0 0E C8 C0 05 F0 13 B1 5F AF 06
0290 D9 F7 7B D0 02 F0 F2 A5 5F 18 69 A6 07
0291 07 90 DA E8 D0 D5 A5 5F 18 69 05 AB 06
0292 85 47 90 01 E8 86 48 18 60 C9 28 A0 05
0293 F0 1E 8D F8 7B A9 00 8D F9 7B 8D 6A 07
0294 FA 7B 8D FB 7B A8 C8 B1 7A C9 28 2A 08
0295 F0 14 C9 02 90 04 C0 1F 90 03 4C 48 05
0296 08 AF C0 04 B0 EA 99 F8 7B 90 E5 BE 07
0297 20 FB A8 4C 73 00 20 88 7C 20 4B 3A 05
0298 7C 90 E6 A9 00 85 45 A9 01 85 46 04 06
0299 20 43 B1 A0 01 B9 F7 7B 91 5F C8 C3 06
0300 C0 05 90 F6 A5 7A 91 5F C8 A5 7B 6E 07
0301 91 5F 20 03 7C 20 73 00 4C 3B A9 7F 04
0302 A2 00 86 0C 20 79 00 85 45 20 13 F8 03
0303 B1 B0 03 4C 08 AF A2 00 86 0E 86 52 05
0304 0D 20 73 00 90 05 20 13 B1 90 0B E4 03
0305 AA 20 73 00 90 FB 20 13 B1 B0 F6 83 06
0306 C9 24 D0 06 A9 FF 85 0D D0 10 C9 D8 06
0307 25 D0 13 A5 10 D0 D0 A9 80 85 0E 4C 06
0308 05 45 85 45 8A 09 80 AA 20 73 00 98 04
0309 86 46 60 AD FD 7B C9 40 D0 03 AD 0F 07
0310 FC 7B 60 20 ED 7C 38 05 10 E9 28 F4 05
0311 D0 03 4C D1 B1 20 3D 7D D0 0F 68 F9 05
0312 48 C9 A0 F0 06 A9 96 48 A9 2A 48 81 06
0313 4C E7 B0 20 C4 7D A0 00 84 10 AD 5E 06
0314 FC 7B 85 5F AD FD 7B 85 60 B1 5F AF 07
0315 85 97 A5 5F 38 E5 97 B0 02 C6 60 E7 06
0316 A6 60 86 60 85 5F EC FD 7B D0 0B 4B 07
0317 CD FC 7B D0 06 20 C7 7D 4C E7 B0 9E 07
0318 A5 45 D1 5F D0 08 A5 46 C8 D1 5F 13 07
0319 F0 0B 88 18 A5 5F 69 07 90 D9 E8 9F 06
0320 D0 D4 A5 5F 18 69 02 A4 60 90 01 00 06
0321 C8 84 48 85 47 60 A9 37 2C A9 37 ED 05
0322 85 01 60 EE D5 7D D0 03 EE D6 7D 7C 07
0323 AD 00 A0 C9 3A B0 0A C9 20 F0 ED 13 07
0324 38 E9 30 38 E9 D0 60 AD D5 7D 85 6A 07
0325 7A AD D6 7D 85 7B 60 AD FC 7B 85 C8 07
0326 C1 AD FD 7B 85 C2 A0 00 60 20 ED 80 07
0327 7C E6 BB A5 BB C9 23 90 05 A2 0F F6 06
0328 4C 37 A4 A4 BE C8 A5 45 91 C1 C8 9D 07
0329 A5 46 91 C1 A9 00 A2 05 C8 91 C1 F0 06
0330 CA D0 FA 84 BE 60 20 88 7C 20 4B 0F 07
0331 7C 90 05 A2 11 4C 37 A4 20 F1 7D C4 05
0332 84 BB B1 47 8D D5 7D C8 B1 47 8D AF 07
0333 D6 7D A5 7A 91 C1 C8 A5 7B 91 C1 4B 08
0334 C8 A5 39 91 C1 C8 A5 3A 91 C1 84 C3 07
0335 BE 20 79 00 C9 29 D0 1E 20 D4 7D F7 05
0336 C9 29 F0 03 4C 08 AF 20 73 00 D0 9B 05
0337 F8 A4 BE 98 38 E9 04 20 6B 7F 20 92 06
0338 E6 7D 4C 3B A9 20 88 7F 20 E6 7D 8F 06
0339 20 FE 7D A5 7A 8D D5 7D A5 7B 8D 99 07
0340 D6 7D 20 93 7F A5 BE 38 E9 04 18 79 06
0341 65 C1 85 49 A5 C2 69 00 85 4A 20 08 06
0342 B1 A9 20 79 00 C9 29 D0 03 4C 60 BA 05
0343 7E C9 2C F0 03 4C 67 7E 20 D4 7D 5F 06
0344 C9 2C F0 03 4C 67 7E 20 73 00 20 24 05
0345 CC 7D 4C 7E 7E 20 3D 7D F0 65 20 39 06
0346 F1 7D AD FC 7B 38 F1 C1 B0 04 CE 58 08
0347 FD 7B 38 E9 05 8D FC 7B B0 03 CE 7E 07
0348 FD 7B 20 F1 7D C8 B1 C1 85 7A C8 63 08
0349 B1 C1 85 7B C8 B1 C1 85 39 C8 B1 40 08
0350 C1 85 3A 4C F8 A8 20 48 7D C0 40 AF 06
0351 90 03 4C 2B AF 20 C4 7D A0 04 B1 CE 05
0352 47 99 FE 7B 88 10 F8 20 C7 7D A9 56 07
0353 FE 85 47 A0 7B 84 48 D0 E3 F0 0C C1 07
0354 AD FD 7B C9 40 D0 08 AD FC 7B D0 5C 08
0355 03 4C 08 AF AD FC 7B D0 03 CE FD 2B 07
0356 7B CE FC 7B 20 F1 7D 84 BE C8 A2 5E 08
0357 00 B1 C1 85 97 F0 06 38 E8 E9 07 F9 06
0358 D0 FB 86 BB 20 FE 7D 20 79 00 F0 96 07
0359 06 20 FD AE 4C 59 7F 98 18 65 97 08 06
0360 C8 91 C1 98 18 6D FC 7B 8D FC 7B 1A 08
0361 90 03 EE FD 7B AD FD 7B C9 5F 90 3F 08
0362 03 4C 35 A4 60 00 00 A5 7A 8D 86 24 05
0363 7F A5 7B 8D 87 7F 60 AD 86 7F 85 34 07
0364 7A AD 87 7F 85 7B 60 20 48 7D 4C 2A 06
0365 A8 A9 A9 00 8D 00 40 8D FC 7B A9 E1 06
0366 40 8D FD 7B 60 20 A4 7F 4C E5 81 08 07
0367 20 A4 7F 4C 7C 83 20 A4 7F 4C 69 F5 05
0368 82 20 A4 7F 20 73 00 4C 71 A8 C9 F6 05
0369 0A F0 F3 4C F3 A7 7D 17 52 45 41 B0 06
0370 54 4C 4F 43 F1 7D 67 41 4B 4C 53 A4 05
0371 50 54 52 E6 7D 7F 42 50 54 4F 42 C2 05
0372 41 53 D5 7D 7E 42 41 53 50 54 52 A4 05
0373 E5 7D 7C 50 52 54 49 04
```

## Listing 2. *Basic Patch program.*

```
1Ø REM RUN BASIC PATCH PROGRAM          :REM*64
21 REM LOWER TOP OF MEMORY              :REM*29
22 POKE 52,7*16: POKE 56, 7*16         :REM*214
24 IF A=Ø THEN A=1: LOAD"Ø:OBJECT",8,1
                                        :REM*72
25 IF A=1 THEN A=2: LOAD"Ø:BASIC 4.5",8,1
                                        :REM*69
```

→

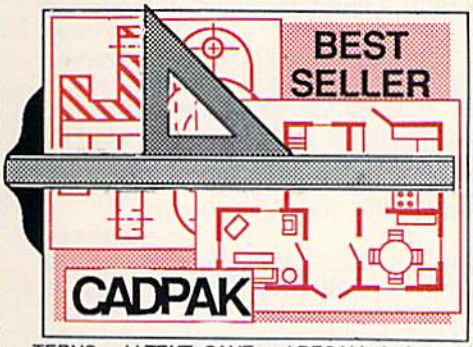
Circle 8 on Reader Service card.

# SUPER SOFTWARE

## BASIC Compiler

Give your BASIC programs the speed and performance they deserve

The *complete* compiler and development package. Speed up your programs 5x to 35x. Many options: flexible memory management; choice of compiling to machine code, compact p-code or both. '128 version: 40 or 80 column monitor output and FAST-mode operation. '128 Compiler's extensive 80-page programmer's guide covers compiler directives and options, two levels of optimization, memory usage, I/O handling, 80 column hi-res graphics, faster, higher precision math functions, speed and space saving tips, more. A great package that no software library should be without. **128 Compiler $59.95**
**64 Compiler $39.95**




Remarkably easy-to-use interactive drawing package for accurate graphic designs. New dimensioning features to create exact scaled output to all major dot-matrix printers. Enhanced version allows you to input via keyboard or high quality lightpen. Two graphic screens for COPYing from one to the other. DRAW, LINE, BOX, CIRCLE, ARC, ELLIPSE available. FILL objects with preselected PATTERNS; add TEXT; SAVE and RECALL designs to/from disk. Define your own library of symbols/objects with the easy-to-use OBJECT MANAGEMENT SYSTEM–store up to 104 separate objects. **C-128 $59.95**
**C-64 $39.95**

## Super C Language Compiler

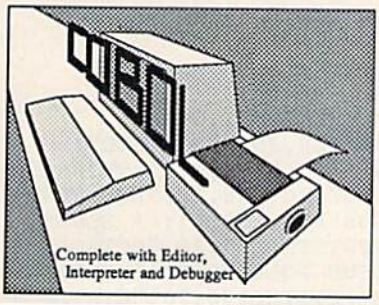
On your C128 or C64

*The language of the 80's and beyond*

For school or software development. Learn C on your Commodore with our in-depth tutorial. Compile C programs into *fast* machine language. C-128 version has added features: Unix™-like operating system; 60K RAM disk for fast editing and compiling Linker combines up to 10 modules; Combine M/L and C using CALL; 51K available for object code; Fast loading (8 sec. 1571, 18 sec. 1541); Two standard I/O librarys plus two additional libraries—math functions (sin, cos, sqrt, etc.) & 20+ graphic commands (line, fill, dot, etc.).
**C-128 $59.95**
**C-64 $59.95**

Let your '128 or '64 speak Pascal

Not just a compiler, but a complete system for developing applications in Pascal with graphics and sound features. Extensive editor with search, replace, auto, renumber, etc. Standard J & W compiler that generates fast machine code. If you want to learn Pascal or to develop software using the best tools available–**SUPER Pascal** is your first choice
**C-64 $59.95**




Now you can learn COBOL, the most widely used commercial programming language, on your 128 or 64. COBOL Compiler package comes complete with syntax-checking editor, interpreter and symbolic debugging aids. New '128 version works with 40/80 column monitors and is faster than the '64 version. **C-64 $39.95**
**New! C-128 $59.95**

## OTHER TITLES AVAILABLE:

**Chartpak**

Easily create professional high-quality charts and graphs without programming. Immediately change the scaling, labeling, axis, bar filling, etc. to suit your needs. Accepts data from CalcResult and MultiPlan. '128 version has 3X the resolution of the '64 version. **C-128 $39.95**
**C-64 $39.95**

**Personal Portfolio Manager**

Complete portfolio management system for the individual or professional investor. Easily manage your portfolios, obtain up-to-the-minute quotes and news, and perform selected analysis. Enter quotes manually or automatically through Warner Computer Systems. **Oct. '86** **C-128 $59.95**
**C-64 $39.95**

**Xper**

XPER is the first "*expert system*" for the C-128 and C-64. While ordinary data base systems are good for reproducing facts, XPER can derive knowledge from a mountain of facts and help you make expert decisions. Large capacity. Complete with editing and reporting. **C-64 $59.95**

***Speedterm-128***

Flexible, command driven terminal software package. Supports most modems for the C-128. Xmodem and Punter file transfer protocol. VT52 and VT100 terminal emulation with cursor keys, large 45K capture buffer and user definable function keys. **C-128 $59.95**

| | |
|---|---|
| Technical Analysis System for the C-64 | $59.95 |
| Technical Analysis System for the C-128 **Sept. '86** | $59.95 |
| Ada Compiler for the C-64 | $39.95 |
| VideoBasic Language for the C-64 | $39.95 |

Commodore 64® and Commodore 128™ are trademarks of Commodore Electronics, Ltd.
Unix™ is a trademark of Bell Laboratories

# Abacus Software

**P.O. Box 7219 Dept. RA Grand Rapids, MI 49510 - Telex 709-101 - Phone (616) 241-5510**

Call **now** for the name of your nearest dealer. Or to order directly by credit card, MC, AMEX of VISA call **(616) 241-5510**. Other software and books are available–Call and ask for your **free** catalog. Add $4.00 for shipping per order. Foreign orders add $12.00 per item. Dealer inquires welcome–1400+ nationwide.

*Listing 2 continued.*

```
3Ø NAM$="{2 SPACEs}{SHFT R}{SHFT U}{SHFT N}
   {SHFT B}{SHFT A}{SHFT S}{SHFT I}{SHFT C
   } 1.Ø{2 SPACEs}"                    :REM*38
4Ø REM PATCH NAME                     :REM*17Ø
5Ø FOR A=1 TO LEN(NAM$)               :REM*6Ø
6Ø POKE 33192+A,ASC(MID$(NAM$,A,1)):NEXT
                                       :REM*6
9Ø REM PATCH COPYRIGHT MESSAGE        :REM*8Ø
1ØØ POKE 3323Ø,ASC("6")               :REM*24
12Ø REM PATCH TOP OF MEMORY POINTER   :REM*32
13Ø POKE 33278,112                    :REM*194
15Ø REM PATCH MERGE, EXEC EXECUTION ADRESSE
   S                                   :REM*94
16Ø POKE 33Ø67,7: POKE 33Ø68,175      :REM*94
17Ø POKE 33Ø69,249: POKE 33Ø7Ø,115    :REM*116
19Ø REM PATCH IN NEW ERROR ROUTINE    :REM*142
2ØØ POKE 33167,184: POKE 33168,127    :REM*88
21Ø REM PATCH NEW TOKENIZE ROUTINE    :REM*17Ø
22Ø POKE 33171,98: POKE 33172,114     :REM*152
23Ø REM PATCH NEW LIST TOKENS ROUTINE
                                      :REM*196
24Ø POKE 33173,142: POKE 33174,115    :REM*24Ø
26Ø REM PATCH COLD AND NMI VECTORS    :REM*25
27Ø POKE 32768,178: POKE 32769,127    :REM*117
28Ø POKE 3277Ø,19Ø: POKE 32771,127    :REM*1Ø1
3ØØ REM POKE DUMMY RETURN FOR EVALVAR
                                      :REM*83
31Ø POKE 38443,96                     :REM*87
33Ø REM PATCH EVALUATE ELEMENT ROUTINE
                                      :REM*11
34Ø REM TO ALLOW LOCAL VARIABLES      :REM*145
35Ø POKE 34277,3: POKE 34278,127      :REM*189
36Ø POKE 34133,2Ø: POKE 34134,116     :REM*137
37Ø POKE 341Ø5,158: POKE 341Ø6,127    :REM*15
39Ø REM PATCH IN NEW RUN COMMAND      :REM*211
4ØØ POKE 34Ø57,2Ø5: POKE 34Ø58,127    :REM*55
42Ø REM PATCH BUGS IN BASIC 4.5       :REM*71
43Ø POKE 34349,4                      :REM*143
44Ø POKE 33137,71: POKE 33138,254     :REM*167
46Ø SYS 64738: REM START RUN BASIC    :REM*41
```

## Listing 3. *Demo program 1; the binary tree.*

```
200 ' DEMO ONE FOR RUN BASIC 1.0
210 PI=3.14159265
250 ' THE BINARY TREE
260 ' THESE 3 SUBENDROUTINES DRAW A TREE
270 '
280 SUB LEFT-BRANCH(SIZE,ANGLE,LEVEL)
290 AHEAD 2*SIZE
300 CALLSUB NODE(SIZE,ANGLE,LEVEL)
310 BACK 2*SIZE
320 SUBEND
330 '
340 SUB RIGHT-BRANCH(SIZE,ANGLE,LEVEL)
350 AHEAD SIZE
360 CALLSUB NODE(SIZE,ANGLE,LEVEL)
370 BACK SIZE
380 SUBEND
390 '
400 SUB NODE(SIZE,ANGLE,LEVEL)
410 IF LEVEL=0 THEN EXIT
420 LEFT ANGLE
430 CALLSUBLEFT-BRANCH(SIZE,ANGLE,LEVEL-1)
440 RIGHT 2*ANGLE
450 CALLSUBRIGHT-BRANCH(SIZE,ANGLE,LEVEL-1)
460 LEFT ANGLE
470 SUBEND
500 ' THIS SUBENDROUTINE PRINTS STRINGS
510 ' TO THE SPECIFIED SCREEN COORDINATES.
515 ' PLEASE NOTE: WHEN USING RUN BASIC,
520 ' TRY USING THIS SUBENDROUTINE.
530 ' RETAINS TURTLE YPOS, HEADING
540 SUB PUTSTR(X,Y,CHAR$)
541 LOCAL XSAV,YSAV,HSAV,C
542 XSAV=XPOS: YSAV=YPOS: HSAV=HEADING
550 PENUP: MOVXY X,Y: TURNTO 0
570 FOR A=1 TO LEN(CHAR$)
580 C=ASC(MID$(CHAR$,A,1))
590 ' CONVERT TO SCREEN CODE VALUE
600 IF C<64 THEN 640
610 IF C<96 THEN C=CAND31: GOTO 640
620 IF C<192 THEN C=(CAND63)OR96:GOTO 640
630 C=CAND95
640 PUTCHAR C: AHEAD 8
650 NEXT A
655 MOVXY XSAV,YSAV:TURNTO HSAV:'POSITION
660 SUBEND
700 ' DRAW TREE BY CALLING EITHER
710 ' RIGHT-BRANCH OR LEFT-BRANCH
720 HIRES 0,1: GCLR
730 ' LABEL TREE
740 CALLSUB PUTSTR(100,180,"BINARY TREE")
750 MOVXY 160,20
760 TURNTO PI/2: PEN 1: PENDOWN
770 CALLSUB LEFT-BRANCH(10,PI/9,7)
800 '
810 SUB C-CURVE(SIZE,LEVEL)
820 IF LEVEL=0 THEN AHEAD SIZE: EXIT
830 CALLSUB C-CURVE(SIZE,LEVEL-1)
840 RIGHT PI/2
850 CALLSUB C-CURVE(SIZE,LEVEL-1)
860 LEFT PI/2
870 SUBEND
880 '
890 GCLR:CALLSUB PUTSTR(210,100,"C CURVE")
900 '
910 MOVXY 160,50: TURNTO PI: PENDOWN
920 CALLSUB C-CURVE(3,10)
960 ' THIS SUBENDROUTINE DRAWS POLYGONS
970 ' SUCH AS SQUARES, TRIANGLES,
980 ' OR OCTAGONS. POLYGONS WITH MANY
990 ' SIDES APPEAR AS CIRCLES.
1000 SUB POLY(SIZE,NUM)
1010 FOR A=1 TO NUM
1020 AHEAD SIZE
1030 RIGHT 2*PI/NUM
1040 NEXT A
1050 SUBEND
1060 '
1070 MOVXY 160,50: TURNTO PI:GCLR
1085 CALLSUB PUTSTR(128,20,"TRIANGLE")
1090 PENDOWN:CALLSUB POLY(60,3):' TRIANGLE
1095 GCLR:CALLSUB PUTSTR(136,20,"SQUARE")
1100 PENDOWN:CALLSUB POLY(60,4): ' SQUARE
1105 GCLR:CALLSUB PUTSTR(136,20,"OCTAGON")
1110 PENDOWN: CALLSUB POLY(20,8):' OCTAGON
1115 GCLR: CALLSUB PUTSTR(136,20,"CIRCLE")
1120 PENDOWN: CALLSUB POLY(5,40): ' CIRCLE
1155 FOR A=1 TO 1000 :NEXT :TEXT :END
```

## Listing 4. *Demo program 2; stars.*

```
10 ' DEMO TWO - STARS
20 PI=3.14159265
30 SUB STAR(SIZE,PNTS)
35 LOCAL T: T=PNTS/2
40 FOR A=1 TO PNTS
50 AHEAD SIZE: LEFT (T-1)/T*PI
60 NEXT
65 SUBEND
70 '
80 HIRES 0,13
90 PEN 1: PENDOWN
95 FOR B=8 TO 52 STEP 2
```

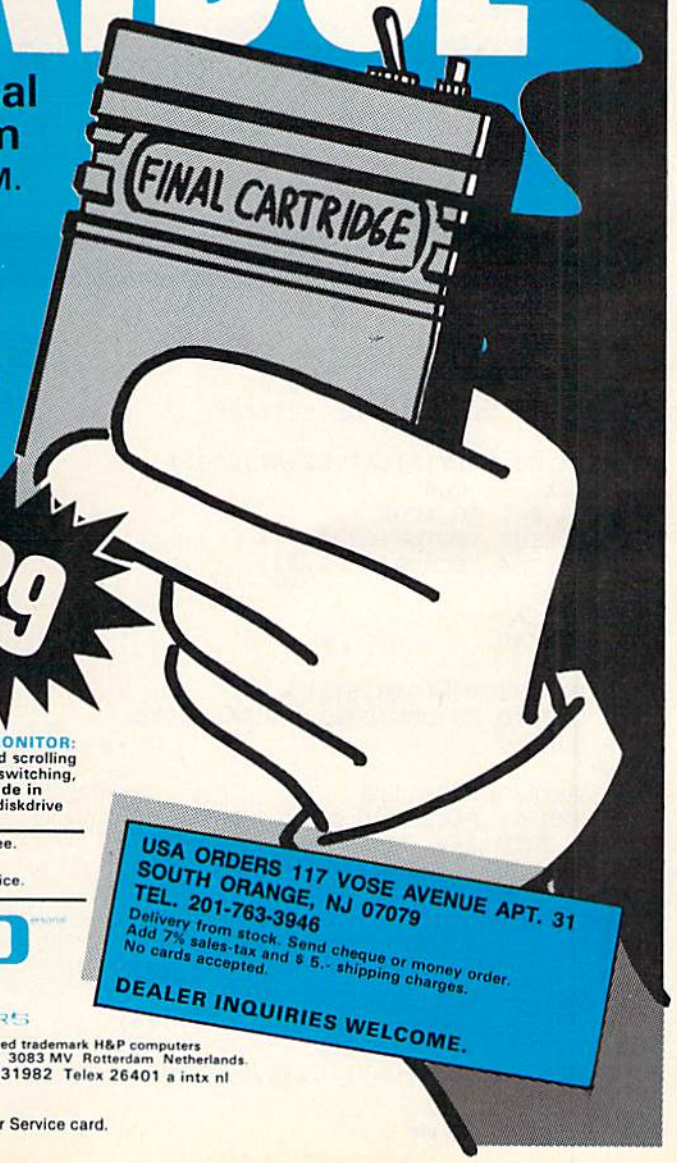
→

Europe's most successfull utility for the C 64

NOW IN THE USA

# THE FINAL CARTRIDGE®

The first external operating system
Does not reside in RAM.




**Includes:**
- **FREEZER**
- **GAMEKILLER**
- **DISK TURBO**
- **CENTRONICS INTERFACE**

**DISK TURBO** - **6 times faster saving.** and loading. (1)

**TAPE TURBO** - 10 times faster tape access.

**ADVANCED CENTRONICS INTERFACE** - compatible with all the wellknown centronics printers. Prints all the Commodore graphics and control codes. (2)

**SCREEN DUMP FACILITIES** Low-res, Hi-res and multicolour screens!! Prints full page with 12 shades of grey for multicolour pictures even from games and programs like Doodle, Koala Pad, Printshop etc. Centronics and Commodore serial.

**24K EXTRA RAM FOR BASIC PROGRAMS AVAILABLE.**

**BASIC 4.0 COMMANDS** - like Dload, Dsave, Dappend, Catalog etc.

**BASIC TOOLKIT** - with Auto, Renum (incl. Goto and Gosub), Find, Help, Old etc.

**PREPROGRAMMED FUNCTION KEYS:** - Run, Load, Save, Disk commands, List (removes all list-protections).

1. Not with every program.
2. Not on every printer.

## FREEZER:

Stops and continues almost every program and allows you to make a total back up to disk or tape automatically.

Specs: **Creates one file on disk or tape. Packs the program. Freezes 4 to 6 times faster than dedicated freezers.**

Menu driven:
Freezer options include:
- **full page printing**
- **fore- and background colour changes**
- **reverse printing**
- **jumps to monitor or reset**
- **Continues running program.**
- **Game Killer.**

**KEYBOARD EXTRA'S** - Allows you to delete part of a line; stop and continues listings; move cursor to lower lefthand corner. Pokes and Syscalls in Hex. Type command operates your printer as a typewriter.

**$39**

**COMFORTABLE EXTENDED ML. MONITOR:** - with relocated load scrolling up and down. Bankswitching, etc. - **does not reside in memory.** Includes diskdrive monitor.

12 Months guarantee.

Specifications may change without notice.

H&P COMPUTERS

copyright and registered trademark H&P computers
Wolphaertsbocht 236 3083 MV Rotterdam Netherlands.
Tel.: 01031 - 104231982 Telex 26401 a intx nl

**USA ORDERS 117 VOSE AVENUE APT. 31 SOUTH ORANGE, NJ 07079**
**TEL. 201-763-3946**
Delivery from stock. Send cheque or money order.
Add 7% sales-tax and $ 5.- shipping charges.
No cards accepted.

**DEALER INQUIRIES WELCOME.**

Circle 72 on Reader Service card.

*Listing 4 continued.*

```
96 MOVXY 80,70: GCLR: TURNTO 0
100 CALLSUB STAR(150,B)
101 FOR A=1 TO 500: NEXT A
105 NEXT B
120 TEXT: END
```

## Listing 5. *Demo program 3; Hilbert curve.*

```
10 ' DEMO THREE - HILBERT CURVE
20 PI=3.14159265
25 DEF FN DEG(DEG)=DEG*PI/180
26 '
30 SUB HILBERT(SIZE,LEVEL,PARITY)
40 IF LEVEL=0 THEN EXIT
50 LEFT PARITY*FN DEG(90)
60 CALLSUB HILBERT(SIZE,LEVEL-1,-PARITY)
70 AHEAD SIZE
80 RIGHT PARITY*FN DEG(90)
90 CALLSUB HILBERT(SIZE,LEVEL-1,PARITY)
100 AHEAD SIZE
110 CALLSUB HILBERT(SIZE,LEVEL-1,PARITY)
120 RIGHT PARITY*FN DEG(90)
130 AHEAD SIZE
140 CALLSUB HILBERT(SIZE,LEVEL-1,-PARITY)
150 LEFT PARITY*FN DEG(90)
160 SUBEND
170 '
180 HIRES 0,1
185 MOVXY 260,30: TURNTO FN DEG(90)
190 PEN 1: PENDOWN: GCLR
200 CALLSUB HILBERT(5,5,1)
210 TEXT: END
```

## Listing 6. *Demo program 4; duopoly.*

```
10 ' DEMO FOUR - DUOPOLY
20 COLOR3,3: PI= 3.14159265
25 DEF FN DEG(DEG)=DEG*PI/180
26 '
30 SUB DUOPOLY(S1,A1,S2,A2,LOOP)
40 LOCAL C: C=0
50 FOR A=1 TO LOOP
60 CALLSUB VECTOR(C*A1,S1)
70 CALLSUB VECTOR(C*A2,S2)
80 C=C+1
90 NEXT A
100 SUBEND
101 '
102 SUB VECTOR(DIR,SIZE)
103 TURNTO FN DEG(DIR): AHEAD SIZE
105 SUBEND
110 '
120 HOME: HIRES 1,0
130 PEN 1: PENDOWN: GCLR
131 ' GOTO 144
140 CALLSUB DUOPOLY(15,90,15,320,36)
141 HOME:GCLR
142 CALLSUB DUOPOLY(30,90,30,300,20)
143 MOVXY 160,70: GCLR
144 CALLSUB DUOPOLY(5 ,5,5 ,-9,362)
145 HOME: GCLR
146 CALLSUB DUOPOLY(9,20,9,-19,356)
147 MOVXY 160,10: GCLR
148 CALLSUB DUOPOLY(10,32,5,4,90)
150 TEXT: END
```

## Listing 7. *Demo program 5; snowflake.*

```
10 ' DEMO FIVE - SNOWFLAKE
15 PI=3.14159265
16 ' CONVERT DEGREES TO RADIANS
17 DEF FN DEG(Y)=Y*PI/180
20 '
30 SUB SIDE(SIZE,LEVEL)
40 IF LEVEL=0 THEN AHEAD SIZE: EXIT
45 LOCAL DIV: DIV=3
50 CALLSUB SIDE(SIZE/DIV,LEVEL-1)
60 LEFT FN DEG(60)
70 CALLSUB SIDE(SIZE/DIV,LEVEL-1)
80 RIGHT FN DEG(120)
90 CALLSUB SIDE(SIZE/DIV,LEVEL-1)
100 LEFT FN DEG(60)
110 CALLSUB SIDE(SIZE/DIV,LEVEL-1)
120 SUBEND
130 '
135 ' PAUSE FOR SPECIFIED NO. OF SECONDS
140 SUB SLEEP(SECS)
150 FOR A=1 TO SECS*889: NEXT
160 SUBEND
170 '
175 ' DRAW A SNOWFLAKE
180 SUB SNOW-FLAKE(SIZE,LEVEL)
190 FOR A=1 TO 3
200 CALLSUB SIDE(SIZE,LEVEL)
201 RIGHT FN DEG(120)
203 NEXT A
205 SUBEND
210 '
220 HIRES 0,1
225 MOVXY 110,20: TURNTO FN DEG(90)
230 PENDOWN: PEN 1: GCLR
240 CALLSUB SNOW-FLAKE(180,4)
250 CALLSUB SLEEP(3): TEXT
260 END
```

## Listing 8. *Demo program 6; nested triangles.*

```
10 ' DEMO SIX - NESTED TRIANGLES
20 PI=3.14159265
25 DEF FN DEG(DEG)=DEG*PI/180
26 '
30 SUB NEST(SIZE,LEVEL)
40 IF LEVEL=0 THEN EXIT
50 AHEAD SIZE/2
60 CALLSUB SUBNEST(SIZE,LEVEL)
70 AHEAD SIZE/2: RIGHT FN DEG(120)
80 AHEAD SIZE: RIGHT FN DEG(120)
90 AHEAD SIZE: RIGHT FN DEG(120)
100 SUBEND
110 '
120 SUB SUBNEST(SIZE,LEVEL)
130 RIGHT FN DEG(60)
140 CALLSUB NEST(SIZE/2,LEVEL-1)
150 LEFT FN DEG(60)
160 SUBEND
170 '
180 HIRES 0,1: MOVXY 100,30: GCLR
190 PEN 1: PENDOWN: TURNTO FN DEG(90)
200 CALLSUB NEST(150,5)
210 FOR A=1 TO 1000: NEXT A
220 TEXT: END
```

end R

Circle 223 on Reader Service card.

# COMMODORE

## MONITORS

RETAIL $299

$99

FREE TRIAL PERIOD

FULL COLOR

RETAIL $400

$238

RGB

## PRINTERS

$69

COMMODORE

NEAR LETTER QUALITY

FREE TRIAL PERIOD

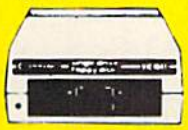
$149

EPSON

HOMEWRITER 10

## DISK DRIVES

1541



$149

1571 $238

## MODEMS

300 BAUD

$28

1200 BAUD

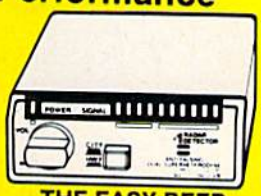
$88

## 64 POWER SUPPLY

$39.00 On Sale!

## RADAR DETECTOR

High Performance



THE EASY BEEP

NOW $88.00

RETAIL $249.00

FREE TRIAL PERIOD

## PRO-TECH-TRONICS

6870 Shingle Crk. Pkwy. #103
Minneapolis, MN 55430

QUICK-DELIVERY

CALL TODAY

SCHOOL P.O.'s ACCEPTED

# 1-800-345-5080

# "The Second Annual

# OVER $25,000 IN PRIZES!
# ENTER AND WIN!

# Great RUNaway"

| List of Contributors | |
|---|---|
| Abacus Software | $309.50 |
| Abby's Software | 35.00 |
| Access Software Inc. | 199.75 |
| Applied Technologies, Inc. | 100.00 |
| Aprotek | 1375.00 |
| Arrays, Inc. | 574.45 |
| Avante Garde Software | 350.00 |
| Batteries Included | 1500.00 |
| Bowater Computer Forms, Inc. | 250.00 |
| Central Point Software | 239.70 |
| Cheatsheet Products, Inc. | 124.90 |
| Clockwork Computers | 228.95 |
| Comal Users Group, U.S.A. Limited | 125.00 |
| Crystal Computer | 329.50 |
| DataShare, Inc. | 150.00 |
| Digital Vision | 649.75 |
| Electronic Courseware Systems, Inc. | 199.75 |
| Emerald Components Int'l | 139.00 |
| Epyx, Inc. | 749.25 |
| Firebird Software | 342.00 |
| Free Spirit Software, Inc. | 224.25 |
| Future Age Computers | 179.70 |
| Gamestar | 249.50 |
| GE Ridge Services, Inc. | 150.00 |
| Great Game Products | 229.80 |
| Hi-Tech Expressions | 59.75 |
| Howard W. Sams & Co., Inc. | 279.25 |
| iht Software | 199.75 |
| Infinity Software | 750.00 |
| Innovative Software | 50.00 |
| Intelligent Software | 149.75 |
| Kingswood Software Associates | 99.75 |
| Kyan Software | 69.95 |
| Lambs Information Systems, Inc. | 1607.32 |
| Lotic Enterprises Quality Assurance Software | 106.00 |
| Master Software | 249.75 |
| Mastertronic International Inc. | 95.94 |
| Michaelsoft | 274.50 |
| Micro Computer Games, Inc. | 100.00 |
| MicroLeague Sports Association | 199.75 |
| Microlit | 260.00 |
| Microprose Simulation Software | 359.50 |
| Mimic Systems Inc. | 300.00 |
| Mindscape, Inc. | 248.50 |
| Minnesota Educational Computing Corp. | 1200.00 |
| North Ohio Firmware | 174.75 |
| Passport Designs, Inc. | 449.85 |
| PlayNet, Inc. | 99.75 |
| Polarware/Penguin Software | 524.25 |
| Prism Software | 599.00 |
| Professional Handicapping Systems | 259.90 |
| Progressive Peripherals & Software | 2365.55 |
| QuantumLink | Free Gift To Everyone Who Enters Contest |
| Radarsoft | 420.50 |
| R.J. Softshop | 369.00 |
| RUN magazine | 400.00 |
| Scholastic, Inc. | 419.50 |
| Serendipity Software | 399.50 |
| Shannon Software | 89.85 |
| SM Software, Inc. | 500.00 |
| Softlore Corp. | 399.50 |
| Softsync, Inc. | 750.00 |
| Springboard Software, Inc. | 499.50 |
| Star Software Company | 97.50 |
| StatSoft, Inc. | 495.00 |
| Strategic Simulations, Inc. | 199.75 |
| Sunburst Communications, Inc. | 295.00 |
| Tab Books | 101.60 |
| TENEX Computer Express | 119.00 |
| Timeworks | 569.50 |
| Tussey Computer Products | 736.80 |
| Ultrabyte, Inc. | 199.75 |
| Value-Soft Inc. | 304.60 |
| Weekly Reader Family Software | 149.75 |
| Wilserv Industries | 100.00 |
| Xetec, Inc. | 1049.75 |
| X*Press Information Services | 100.00 |
| X-10 USA | 300.00 |

ALL RUNAWAY ENTRANTS WILL RECEIVE A FREE BONUS FROM QUANTUMLINK!*

**RUN magazine** is sponsoring ***The Second Annual Great RUNaway***—the only Commodore software/hardware sweepstakes of its kind.

**Last year's *RUNaway*** was so successful, we're doing it again. Our readers sent in over 90,000 entries! The five lucky winners walked away with thousands of dollars worth of software, hardware peripherals and supplies. This year we will pick 20 winners. Your chances of winning are even better!

**To enter**, just fill out the attached coupon, send it in an envelope to: The Second Annual Great RUNaway, 80 Pine Street, Peterborough, NH 03458. The entry must arrive by October 31, 1986. On November 3, 1986, we will randomly draw the names of 20 winners.

**How** can you pass up this opportunity to win thousands of dollars worth of Commodore products? This is your one and only chance to enter a sweepstakes of this kind. Don't hesitate—*MAIL YOUR ENTRY IN TODAY...*

**QuantumLink** is the on-line service that will help you get much more out of your Commodore computer. When you connect to "Q-Link," you'll be able to meet people, exchange programs, access information, and have a lot of fun. You'll also be able to participate in the on-line version of RUN's popular Resource Center.

Send coupon to:
**The Second Annual Great RUNaway**
80 Pine Street
Peterborough, NH 03458

Name _____
*Please Print*
Address _____
City, State, Zip _____
Phone _____

Do you want to subscribe to RUN?

☐ **YES,** I want 12 issues of RUN for the low subscription price of $19.97—a savings of 44% off the cover price. (We will bill you.)

☐ **No**

* By special arrangement, everyone who enters the RUNaway will receive a free bonus from Q-Link. (Offer limited to one Q-Link bonus per household.) Q-Link subscribers have access to a wide range of services for a monthly fee of $9.95. The Q-Link bonus will be delivered after the November 3rd drawing.

☐ I don't yet subscribe to Q-Link, but I want to try it. Send me a free Q-Link disk and users guide.

Type of Modem: ( ) 300 Baud ( ) 1200 baud ( ) Don't yet own one

☐ I already subscribe to Q-Link, so send me a free gift instead.

Q-Link USER NAME: _____

**Rules**

To officially enter the ***Second Annual Great RUNaway***, fill out the attached coupon or facsimile. Entries must reach the RUN offices by October 31, 1986. **Your entry must be in an individual postage paid envelope.** Only one prize will be awarded per household. The odds of winning a prize will depend on the number of entries received. Taxes and duties on all prizes are the sole responsibility of the winners. No substitutions will be made for any of the prizes. All prizes will be awarded. In the event that all prizes are not claimed, random drawings will be held from all entries received to award unclaimed prizes. All federal, state and local laws apply. Void where prohibited by law. Contest is open to residents of the U.S., its possessions, Canada and Mexico. All winners will be notified by phone and mail. Anyone of any age may enter, but prizes won by a minor must be claimed by a parent or legal guardian. A complete list of winners will be published in RUN magazine. Employees of CW Communications, Inc., its affiliates, subsidiaries, advertising and promotion agencies and the families of each are not eligible to enter. Entry constitutes permission to use winners' names, photographs, or other likenesses for promotional purposes without further compensation to the winners. Winners will be selected in a random drawing held on Monday, November 3, 1986. RUN magazine will not be responsible for lost, misdirected or late mail.

**Please Send Me The Following Back Issues of ReRUN:**

☐ **Buy Both Vol. I and Vol. II*—SAVE $5**
☐ Cassettes $17.94 ☐ 2 Disks $37.94

☐ **Spring Edition*** —Includes: + Tax Records 64, + CalcAid, °Quatro, and + Fly The Grand Canyon. (Runs on C-64, VIC-20, and/or C-128. Separate media for C-64 and VIC-20. Please specify.)

☐ **GAMEPAK**—Features never-before-published games: Ski, + Hassle-Castle, and + Lava Pit, Plus, **RUN** favorites like Find The Word, and Tag. (Runs on C-64/C-128.)

☐ **Summer Edition**—Includes: Sound Effects, + Joystick Artist, + Play Ball, and Money Manager. (Runs on C-64, C-128.)

☐ **Fall Edition**—Includes: Home Run Derby, Turtle Graphics, Big Letters, Function Keys, Test Maker, Flynn's Gold, + Disk Doctor, and more! (Runs on C-64, C-128.)

☐ **Productivity Pak Disk** + —Includes: Home Finance Aid, Basic 4.5, Datafile, DF Mail, DF Report, DF Print, DF Calc, Run Term, Run It Write, Disk Master, Graphmaker, Memo, Screen Print (programs run on C-64/C-128 in 64 Mode only)

☐ **Winter Edition**—Includes: Perfect Typist, Pay the Bills, UltraQuiz, Perfect Pitch, Make Music, Source Reader, Source Print, Brainstorming, + Songfest, + Joy to the World, + Adeste Fideles, + Spirited Sprites, and more! (programs run on C-64/C-128 in 64 Mode only)

+ Available on disk only.
° Available on C-64 version only.
Disks contain more programs than cassettes.
* Separate version available for VIC-20

☐ C-64 ☐ VIC-20

☐ Cassette $11.47 each

☐ Disk $21.47 each

☐ Payment enclosed ☐ AE ☐ Visa ☐ MC

Card # _____

Exp. Date _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Prices include postage and handling.
Please allow 4-6 weeks for delivery.
US funds on US banks only.

9-86BI

80 Pine St. • Peterborough, NH 03458

# If Your ReRUN Library Is Incomplete,

# Fill In The Blanks!

Missing any of these hot selling back issues of ReRUN?

- **Volume I**
- **Volume II**
- **Spring Edition**
- **Gamepak**
- **Summer Edition**
- **Fall Edition**
- **Productivity Pak**
- **Winter Edition**

It's not too late to catch up! While quantities last, you can get every **ReRUN** published. Enjoy the most popular RUN programs on cassette or disk! It's as easy as filling out the coupon, or calling **1-800-258-5473**. In NH, dial 1-924-9471.

Circle 254 on Reader Service card.

# Software Discounters of America

For Orders Only—1-800-225-7638
PA Orders—1-800-223-7784
Customer Service 412-361-5291

## Open Saturday

- Free shipping on orders over $100 in continental USA
- No surcharge for VISA/MasterCard
- Your card is not charged until we ship

**ABACUS**
Basic 128
Cad Pak 128
Chart pak 128 — CALL
Cobol 64 — FOR
Power Plan 64 — PRICES
Super C 128

**ACCESS**
Beach Head 2 (D) ... $24
Leader Board Golf (D) $25
Leader Board Tourn. Disk #1 ... $14
Mach 5 (R) ... $23
Mach 128 (R) ... $33
Tenth Frame (D) ... $25

**ACTIVISION**
Alter Ego (Male or Female) ... $33
Borrowed Time (D) ... $19
Garry Kitchen's Gamemaker (D) ... $25
Great American Cross-Country Road Race (D) ... $19
Hacker (D) ... $19
Hacker 2 (D) ... $23
Little Computer People (D) ... $23
Mindshadow (D) ... $19
Music Studio (D) ... $23
Murder on the Mississippi (D) ... $23
Space Shuttle (D) ... $19

**ACCOLADE**
Ace of Aces (D) ... $19
Dambusters (D) ... $19
Deceptor (D) ... $19
Fight Night (D) ... $19
Hard Ball (D) ... $19
Law of the West (D) ... $19
PSI-5 Trading Co. (D) ... $19

**AMERICAN EDUCATIONAL**
Biology (D) ... $14
French (D) ... $14
Grammar (D) ... $14
Science: Grades 3/4(D) $14
Science: Grades 5/6(D) $14
Science: Grades 7/8(D) $14
Spanish (D) ... $14
U.S. Geography (D) ... $14
World Geography (D) $14
World History (D) ... $14

**ARTWORX**
Beach Blanket Volleyball (D) ... $12
Bridge 4.0 (D) ... $16
Cycle Night(D) ... $12
Equestrian Show Jumper (D) ... $12
Strip Poker (D) ... $21
Data Disk #1 female ... $16
Data Disk #2 male ... $16
Data Disk #3 female ... $16

**ARTWORX PX**
Baker St. Detective (D) $7
Hole In One Golf (D) ... $7
Hotel Alien (D) ... $7
Jumpin' Jimmy (D) ... $7
Pro Boxing (D) ... $7

**AVALON HILL**
Gulf Strike (D) ... $19
Mission Thunderhead (D) ... $16
Super Bowl Sunday (D) ... $21
SBS 1984 Team Disk ... $14
SBS 1985 Team Disk Call
SBS Champs Disk ... $14
Spitfire '40 (D) ... $23
Title Bout (D) ... $19
Tournament Golf (D) ... $19

**BATTERIES INCLUDED**
Consultant (64 or 128) $39
Home Pak (D) ... $33
Paperclip w/Spell 64 or 128 ... $49
Paperclip II 128 ... $49

**BERKELEY SOFTWORKS**
Geos (D) ... $39

**BRODERBUND**
Bank St. Filer (D) ... $33
Bank St. Mailer (D) ... $33
Bank St. Writer (D) ... $33
Bank St. Speller (D) ... $33
Breakers (D) ... $25
Carmen Sandiego (D) $23
Music Shop (D) ... $29
Print Shop (D) ... $26
P.S. Companion (D) ... $23
P.S. Graphics Library #1, #2, or #3 ... $16 Ea.
Type! (D) ... $25

**CARDCO**
Calc Now (D) ... $14
File Now (D) ... $14
Freeze Frame (R) ... $33
Graph Now (D) ... $14
Hidden Assets (R) ... $49
Mail Now (D) ... $14
S'more (R) ... $44
Super G Pr. Int. w/16K Buffer ... $49
Write Now (R) ... $19

**CBS**
Argos Expedition (D) ... $9
Big Bird's Funhouse(R) ... $9
Big Bird Spc. Del. (R) ... $9
Body in Focus (D) ... $23
Dream House (D) ... $9
Ernie's Big Splash (D) ... $9
Ernie's Magic Shapes (R) ... $9
Grover's Animal Adventures (D) ... $9
Mastering the SAT (D) ... $44
Math Mileage (D) ... $9
Movie Musical Madness (D) ... $9
Railroad Works (D) ... $9
Rich Scarry's Electronic Word Book (D) ... $12
Sesame St. Pals Around Town (D) ... $9
Success w/Algebra ... Call
Success w/Math ... Call
Timebound (D) ... $9
Weather Tamers (D) ... $9

**CMS**
General Accounting 128 ... $119

**DATA EAST**
Commando (D) ... $23
Karate Champ (D) ... $23
Kung Fu Master (D) ... $23

**DATASOFT**
Alternate Reality (D) ... $25
Conan (D) ... $9
Dig Dug (D) ... $9
Mr. Do (D) ... $9
Never Ending Story (D) $19
Ping Pong (D) ... $19

**DAVIDSON**
Math Blaster (D) ... $33
Speed Reader 2 (D) ... $43
Spell It (D) ... $33
Word Attack (D) ... $33

**DIGITAL SOLUTIONS**
Pocket Filer 128 ... $33
Pocket Planner 128 ... $33
Pocket Writer 64 ... $25
Pocket Writer 128 ... $33

**ELECTRONIC ARTS**
Adv. Const. Set (D)
Amnesia (D)
Archon 2: Adept (D)
Bard's Tale (D)
Europe Ablaze (D)
Heart of Africa (D)
Lords of Conquest (D)
Mail Order Monsters (D)
Movie Maker (D)
Music Const. Set (D)
One-on-One (D)
Pinball Const. Set (D)
Racing Dest. Set (D)
Seven Cities of Gold (D)
Skyfox (D)
Super Boulder Dash (D)
Timothy Leary's Mind Mirror (D)
Ultimate Wizard (D)
***Prices too low to advertise!!*** ... *Call*

**EPYX**
Barbie (D) ... $9
Breakdance (D) ... $9
Champ. Wrestling (D) ... Call
Destroyer (D) ... Call
Fast Load (R) ... $23
Impossible Mission (D) ... $9
Movie Monster (D) ... $23
Multiplan 128 ... $39
Pitstop II (D) ... $9
Summer Games 2 (D) $23
Super Cycle (D) ... $23
Temple of Apshai Trilogy (D) ... $23
Winter Games (D) ... $23
World Championship Karate (D) ... $19
World Games (D) ... $23
World's Greatest Baseball-Improved ... $23
World's Greatest Football (D) ... $23

**FIREBIRD**
Colossus Chess 4 (D) $23
Elite (D) ... $19
Frankie Goes to Hollywood (D) ... $23
The Pawn (D) ... $25

**FISHER PRICE**
Alpha Build (R) ... $9
Dance Fantasy (R) ... $9
Hop Along Counting (R) ... $9
Linking Logic (R) ... $9
Memory Manor (R) ... $9
Number Tumbler (R) ... $9
Sea Speller (R) ... $9

**GAMESTAR**
Champ. Basketball (D) $23
Star Rank Boxing (D) $19

**HAYDEN**
Sargon 3 (D) ... $25

**HES**
Microsoft Multiplan (D) $19
Millionaire (D) ... $16
Omniwriter w/Spell (D) $23
Project Space Station (D) ... $19

**HI-TECH EXPRESSIONS**
Card Ware (D) ... $9
Heart Ware (D) ... $9
Party Ware (D) ... $14
Ware w/all Supply Kit ... $12

**INFOCOM**
Ballyhoo (D) ... $25
Cut Throats (D) ... $23
Enchanter (D) ... $23
Hitchhiker's Guide to the Galaxy (D) ... $23
Infidel (D) ... $25
Leather Goddesses of Phobos (D) ... Call
Planetfall (D) ... $23
Sorcerer (D) ... $25
Suspect (D) ... $25
Trinity 128 ... $25
Wishbringer (D) ... $23
Zork 1 (D) ... $23
Zork 2 or 3 (D) ... $25

**INTRACORP**
Intracourse (Compatibility) & Analysis Modules) $65
Intracourse (Compatibility Module) ... $33
Intracourse (Analysis Module) ... $39

**MASTERTRONIC**
Action Biker (D) ... $7
Electra Glide (D) ... $7
Gates of Dawn (D) ... $7
Infinity Machine (R) ... $19
Kikstart (D) ... $7
5-A-Side Soccer (D) ... $7
Last V-8 (D) ... $7
Master of Magic (D) ... $7
Ninja (D) ... $7
Sekaa of Assiah (D) ... $7
The Slugger (D) ... $7
Vegas Jackpot (D) ... $7

**MICROLEAGUE**
Baseball (D) ... $25
Box Score Stats (D) ... $16
General Manager (D) $25
1985 Team Data Disk $14

**MICROPROSE**
F-15 Strike Eagle (D) ... $23
Gunship (D) ... $23
Kennedy Approach(D) ... $23
Silent Service (D) ... $23

**MINDSCAPE**
Bank St. Music Writer (D) ... $19
Bank St. Storybook (D) $19
Bop & Wrestle (D) ... $19
Color Me: The Computer Coloring Kit (D) ... $19
Fairlight (D) ... $19
Great British Software (D) ... $12
Halley Project (D) ... $19
Infiltrator (D) ... $19
Perfect Score SAT (D) $44
Spell of Destruction(D) $19
The American Challenge Sailing Simulation (D) $19

**MISC**
Bob's Term 64 (D) ... $29
Bob's Term 128 ... $49
CSM 1541 Align Kit (D) ... $29
Central Point Copy 2 (D) ... $23
Gato (D) ... $19
Snapshot 64 (R) ... Call
Superbase 64 (D) ... $47
Superbase 128 ... $59
Superscript 64 (D) ... $47
Superscript 128 ... $47

**ORIGIN**
Ultima 3 (D) ... $34
Ultima 4 (D) ... $39

**PENGUIN/POLARWARE**
Crimson Crown (D) ... $12
Graphics Magician Painter (D) ... $16
Oo-Topos (D) ... $12
Transylvania (D) ... $12

**PROFESSIONAL SOFTWARE**
Fleet System 2—W.P. w/70,000 word spell checker 64 or 128 ... $39
Fleet System 3 (128) ... $49

**SCARBOROUGH**
Boston Computer Diet (D) ... $33
Build A Book (D) ... $16
Mastertype (D) ... $25
Net Worth (D) ... $39

**SIMON & SCHUSTER**
Chem Lab (D) ... $25
Great International Paper Airplane Construction Set(D) $19
Star Trek-The Kobayashi Alternative (D) ... $25
Typing Tutor 3 (D) ... $25

**SPINNAKER**
ACE: Air Combat Emulator (D) ... $14
Adventure Creator (R) ... $9
Alphabet Zoo (R) ... $9
Alf in Color Cave (R) ... $9
Delta Drawing (R) ... $9
Facemaker (R) ... $9
Fraction Fever (R) ... $9
Homework Helper-Math Word Problems (D) $23
Homework Helper-Writing (D) ... $23
Invaders of the Lost Tomb (D) ... $19
Kids on Keys (R) ... $9
Kung Fu 1—Exploding Fist (D) ... $19
Kung Fu 2—Sticks of Death (D) $19

**SPRINGBOARD**
Certificate Maker (D) $33
Newsroom (D) ... $33
N.R. Clip Art Vol. 1 (D) $19
N.R. Clip Art Vol. 2 (D) $25
P.S. Graphics Expander (D) ... $25

**SSI**
Battle Group (D) ... $37
Battle of Antietam(D) $33
Colonial Conquest (D) $25
Computer QB (D) ... $25
Field of Fire (D) ... $25
Gemstone Warrior (D) $23
Gettysburg (D) ... $37
Kampfgruppe (D) ... $37
Mech Brigade (D) ... $37
NAM (D) ... $25
Phantasie (D) ... $25
Phantasie 2 (D) ... $25
Questron (D) ... $25
Rings of Zilfin (D) ... $25
Roadwar 2000 (D) ... $25
Shard of Spring (D) ... $25
U.S.A.A.F. (D) ... $37
Wings of War (D) ... $25
Wizard's Crown (D) ... $25

**SOFTSYNC**
Desk Manager 64 or 128 (D) ... $25
Model Diet (D) ... $19
Personal Accountant (D) ... $23
Trio 64 (D) ... $43

**SUBLOGIC**
Baseball (D) ... $32
Flight Simulator 2 (D) ... $32
F.S. Scenery Disks ... Call
Football (D) ... $29
Jet (D) ... $29

**TELARIUM**
Amazon (D) ... $9
Fahrenheit 451 (D) ... $9
Dragon World (D) ... $9
Nine Princes in Amber (D) ... $21

**TIMEWORKS**
Accts. Payable (D) ... $39
Accts. Receivable (D) $39
Data Manager 2 (D) ... $33
Data Manager 128 ... $43
Evelyn Wood Dynamic Reader (D) $33
General Ledger (D) ... $39
Inventory Mgmt (D) ... $39
Partner 128 (R) ... $43
Payroll Mgmt. (D) ... $39
Sales Analysis Mgmt (D) ... $39
Swiftcalc/Sideways(D) $33
Swiftcalc/Sideways (128) ... $43
Sylvia Porter's Personal Fin. Planner 64 (D) $33
Sylvia Porter's Personal Financial Planner 128 ... $43
Word Writer w/Speller (D) ... $33
Word Writer w/85000 Word Speller (128) $43

**UNISON WORLD**
Art Gallery 1 (D) ... $16
Art Gallery 2 (D) ... $16
Print Master (D) ... $23

**WEEKLY READER**
Stickybear ABC'S (D) $19
Stickybear Math (D) ... $19
Stickybear Numbers(D) $19
Stickybear Reading (D) $19
Stickybear Shapes (D) ... $19

**WINDHAM CLASSICS**
Alice in Wonderland (D) $9
Below the Root (D) ... $9
Swiss Family Robinson (D) ... $9
Treasure Island (D) ... $9
Wizard of Oz (D) ... $9

**ACCESSORIES**
Bonus SS. DD ... $5.99 Bx
Bonus DS. DD ... $6.99 Bx
Compuserve Starter Kit ... $19
Disk Case (Holds 50) ... $9
Disk Drive Cleaner ... $9
Kraft Joystick ... $9
Panasonic 1080 — GREAT
100 cps. printer — DEAL
Sakata 13" Color Composite Monitor for C64 ... $139
Seikosha SP1000VC 100 CPS Commodore direct-connect dot matrix printer ... $179
Wico Bat Handle ... $17
Wico Black Max ... $9
Wico Boss ... $12

**Hours:** Eastern Time
Mon.-Fri. 9AM-5PM
Sat. 10AM-5PM

## P.O. BOX 111327—DEPT. RN—BLAWNOX, PA 15238

***Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order:** Orders with cashiers check or money order shipped immediately. Personal & Company checks allow 3 weeks clearance. NO C.O.D.'s! **Shipping: Continental U.S.A.**—Orders under $100 add $3; **free shipping on orders over $100. AK, HI, FPO, APO—add $5 on all orders. Canada & Puerto Rico—add $10 on all orders.** Sorry, no other international orders accepted! **PA residents add 6% sales tax on the total amount of order including shipping charges!** Prices subject to change without notice. **REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1)** Status of order or back order **(2)** If any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. Defective merchandise will be replaced with the same merchandise only! NO CREDITS! After 60 days please refer to the manufacturers warranty included with the merchandise & return directly to the manufacturer. **Customer service will not accept collect calls or calls on S.D. of A.'s 800# order lines!**

Circle 15 on Reader Service card.

# Famous National Brand

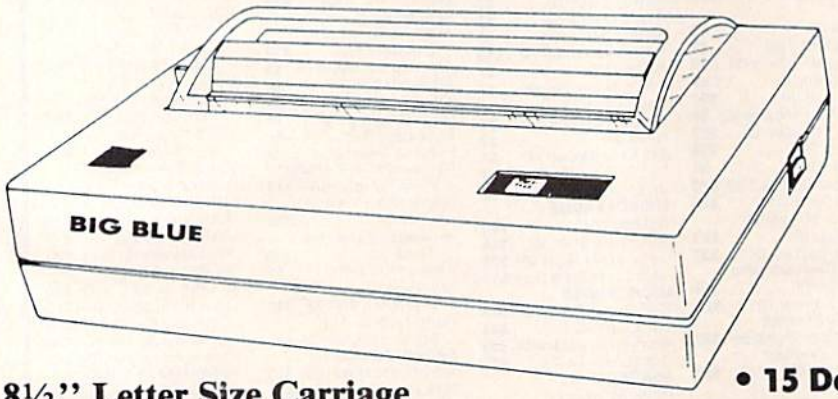
Commodore® • Atari® • Apple® • IBM®

List $199.00 Sale $39.95

## 8½" Letter Size 80 Column Printer Sale

List $199.00 Sale $39.95

**• Word Processing • Program Listings • Graphics • Quiet Operation • Upper and Lower case • All points addressable Graphics • Underline • Enhanced • Much much More**




8½" Letter Size Carriage

### Super Quality

This printer was made by **Canon®** for one of the largest computer manufacturers in the world. The Big Blue printer comes ready to hook up to the serial port of the **IBM®PC** jr. Plus with low cost adapter cables you can connect the Big Blue printer to the **IBM®PC, IBM®XT, IBM®AT, Apple®II,IIe,IIc, Commodore®** 64,128, **Atari®**, plus many more.

**• 15 Day Free Trial**

**• 90 Day Immediate Replacement Warranty**

Now you can have a full fledged 8½" letter size 80 column printer for less than the cost of a large box of paper. This printer uses advanced thermal technology to print upper and lower case (with true lower descenders), underline, enhanced, all points addressable graphics (works with Printshop) plus More. Print out pictures, program listings, wordprocessing pages, graphics and more. Perfect for the homeowner or student and definitely affordable. Fantastic Printer at an unbeatable price. List $199.00 **Sale $39.95**

**Intelligent Commodore Interface**— Allows you to connect the Big Blue printer to the printer port of the Commodore 64 and 128 computer. Print Commodore graphics, use Printshop, Word processors and more... List $49.95 **Sale $24.95**

**Intelligent Atari Interface**— Allows you to connect the Big Blue printer to Atari computers (except 1200). Print Atari graphics, Printshop ,word processors, and more... List $49.95 **Sale $24.95**

**IBM®, Apple® RS-232 Adapter**— Adapts the Big Blue printer to be used with any RS-232 port. List $19.95 **Sale $9.95**

**Paper** (2 Rolls) List $19.95 **Sale $9.95**

IBM, Apple, Canon, Commodore, Atari are trademarks of International Business Machines, Apple Computer, Canon Inc, Commodore Business Machines, Atari Inc. Respectively.

Add $10.00 for shipping, handling, and insurance. Illinois residents please add 6¼% sales tax. Add 20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice.

**VISA — MASTER CARD — C.O.D.** C.O.D. on phone orders only.

# PROTECTO

*We Love Our Customers*

22292 N. Pepper Rd., Barrington, Illinois 60010

**312/382-5244 to order**

Circle 15 on Reader Service card.

# COMMODORE 64 COMPUTER

(Order Now)

**$149.95**

- C128 Disks 79¢ ea.*
- Comstar Writer 64 $19.95
- 13" Color Monitor $139.95

# COMMODORE 64 SYSTEM SALE

Commodore 64 Plus $30.00 S&H

Com. 1541 Disk Drive

13" Color Monitor

**$457** (Ltd. Qty)

# C128 Commodore Computer & 1571 Disk Drive

**$499.00**

- Voice Synthesizer $39.95
- 12" Monitor $79.95

*CALL BEFORE YOU ORDER* — SPECIAL SOFTWARE COUPON — *PRICES MAY BE LOWER*

**COMMODORE 64 COMPUTER $149.95**
You pay only $149.95 when you order the powerful 84K COMMODORE 64 COMPUTER! LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your computer that allows you to SAVE OVER $250 off software sale prices!! With only $100 of savings applied, your net computer cost is $49.95!!

*** C128 DOUBLE SIDED DISKS 79¢ EA.**
Get these 5¼" Double Sided Floppy Disks specially designed for the Commodore 128 Computer (1571 Disk Drive). 100% Certified, ***Lifetime Warranty***, Automatic Lint Cleaning Liner included. 1 Box of 10 - $9.90 (99¢ ea.), 5 Boxes of 10 - $44.50 (89¢ ea.), 10 Boxes of 10 -$79.00 (79¢ ea.).

**13" COLOR MONITOR $139.95**
You pay only $139.95 when you order this 13" COLOR MONITOR. LESS the value of the SPECIAL SOFTWARE DISCOUNT COUPON we pack with your monitor that allows you to save over $250 off software sale prices!! With only $100 of savings applied, your net color monitor cost is only $39.95. (16 Colors).

**Premium Quality 150-170 CPS Comstar Aero 160 Printer $199.00**
The COMSTAR Aero 160 gives you a 10" carriage, 150-170 CPS, 9 x 9 dot matrix with double strike capability for 18 x 18 dot matrix (near letter quality), high resolution bit image (120 x 144 dot matrix), underlining, back spacing, left and right margin setting, true lower decenders with super and subscripts, prints standard, block graphics and special characters. It gives you print quality and features found on printers costing twice as much!! (Centronics Parallel Interface) List $499.00 **Sale $199.00.**

**9" SAMSUNG GREEN SCREEN MONITOR**
Super High Resolution composite green screen monitor. Perfect for 80 column use with The C128 computer (Req. $19.95 Cable)
List $129.95 **Sale $59.95.**

**80 COLUMNS IN COLOR**
**COMSTAR WRITER 64 WORD PROCESSOR $19.95**
This COMSTAR WRITER 64 WORD PROCESSOR is the finest available for the COMMODORE 64 computer! The ULTIMATE FOR PROFESSIONAL Word Processing, DISPLAYS 40 or 80 COLUMNS IN COLOR or black and white! Simple to operate, powerful text editing, complete cursor and insert/delete key controls line and paragraph insertion, automatic deletion, centering, margin settings and output to all printers! List $99.00. **SALE $19.95.** ***Ltd. Qty*** ***Closeout Item***

**We pack a SPECIAL SOFTWARE DISCOUNT COUPON with every COMMODORE 64 COMPUTER, DISK DRIVE, PRINTER, or MONITOR we sell! This coupon allows you to SAVE OVER $250 OFF SALE PRICES!!**

**(Examples)**
**PROFESSIONAL SOFTWARE**
**COMMODORE 64**

| Name | List | Sale | Coupon |
|---|---|---|---|
| PaperClip | $59.95 | $34.95 | $29.95 |
| Consultant | $59.95 | $49.95 | $39.95 |
| Leader Board | $39.95 | $24.95 | $22.95 |
| The Print Shop | $44.95 | $27.95 | $26.95 |
| Halley's Project | $39.95 | $22.95 | $19.95 |
| Practicalc (spread sheet) | $59.95 | $19.95 | $14.95 |
| Voice Command Module | $79.95 | $39.95 | $34.95 |
| Nine Princes in Amber | $32.95 | $24.95 | $21.95 |
| Super Bowl Sunday | $35.00 | $22.95 | $19.95 |
| Flip and File Disk Filer | $24.95 | $14.95 | $12.95 |
| Pro Joy Stick | $19.95 | $12.95 | $10.00 |
| PartyWare | $19.95 | $14.95 | $11.95 |
| Dust Cover | $ 8.95 | $ 6.95 | $ 4.60 |
| Financial Planner Sylvia Porter | $59.95 | $38.95 | $35.95 |
| Hardball | $29.95 | $18.95 | $16.95 |
| C64 Troubleshoot & Repair Guide | $24.95 | $15.95 | $12.95 |

*(See over 100 coupon items in our catalog)*

**Write or call for Sample SPECIAL SOFTWARE COUPON!**

**ATTENTION**
**Computer Clubs**
***We Offer Big Volume Discounts***
**CALL TODAY!**

**PROTECTO WARRANTY**
All Protecto's products carry a minimum 90 day warranty. If anything fails within 90 days from the date of purchase, simply send your product to us via United Parcel Service prepaid. We will IMMEDIATELY send you a replacement at no charge via United Parcel Service prepaid. This warranty proves once again that ***We Love Our Customers.***

**C128 COMPUTER & 1571 $499.00**
Now you can get the C128 Commodore computer & the 1571 Disk Drive for one low price of only $499.00. List $698.00
**SALE $499.00.**

**340K 1571 COMMODORE DISK DRIVE $259.00**
Double Sided, Single Disk Drive for C-128 allows you to use C-128 mode plus CPM mode. 17 times faster than 1541, plus runs all 1541 formats.
List $349.00. **Sale $259.00.**

**SUPER AUTO DIAL MODEM $29.95**
Easy to use. Just plug into your Commodore 64 computer and you're ready to transmit and receive messages. Easier to use than dialing your telephone, just push one key on your computer! Includes exclusive easy to use program for up and down loading to printer and disk drives.
***Best In U.S.A.*** List $99.00. **SALE $29.95.**
*Coupon $24.95.*

**VOICE SYNTHESIZER $39.95**
For Commodore-64 computers. Just plug it in and you can program words and sentences, adjust volume and pitch, make talking adventure games, sound action games and customized talkies!! PLUS ($19.95 value) TEXT TO SPEECH program included FREE, just type a word and hear your computer talk — ADD SOUND TO "ZORK", SCOTT ADAMS AND OTHER ADVENTURE GAMES!! (Disk or tape.) List $89.00. **SALE $39.95**

**12" SAMSUNG AMBER SCREEN MONITOR $79.95**
Super High Resolution amber screen monitor. 80 columns x 24 lines, easy to read, a must for wordprocessing . Fantastic value.
List $129.00. **Sale $79.95.**
(C128 cable $19.95. C64, Atari cable $9.95)

**PRINTER/TYPEWRITER COMBINATION $199.95**
Superb letter quality, daisy wheel printer/typewriter combination. Two machines in one — just a flick of the switch. Extra large carriage, typewriter keyboard, automatic margin control compact,lightweight, drop in cassette ribbon! (90 day warranty) centronics parallel interface Built -in. List $349.00. **SALE $199.95.** ***(Ltd. Qty.)***

**14" RGB & COMPOSITE COLOR MONITOR $239.95**
Must be used to get 80 columns in color with 80 column computers (C128 - IBM - Apple). (RGB Cable $19.95) Add $14.50 shipping.
List $399.00. **SALE $239.95.**

- LOWEST PRICES • 15 DAY FREE TRIAL
- BEST SERVICE IN U.S.A. • ONE DAY EXPRESS MAIL

**PHONE ORDERS**
8 a.m. - 8 p.m. C.S.T. Weekdays
9 a.m. - 12 noon C.S.T. Saturdays

- 90 DAY FREE REPLACEMENT WARRANTY
- OVER 500 PROGRAMS • FREE CATALOGS

Add $10.00 for shipping, handling and insurance. Illinois residents please add 6¼% tax. Add $20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail! Prices & Availability subject to change without notice.
VISA — MASTER CARD — C.O.D. No. C.O.D. to Canada, APO-FPO

**PROTECTO**
*We Love Our Customers*
22292 N. Pepper Rd., Barrington, Illinois 60010
**312/382-5244 to order**

# Programmers, Take Note!

By BOB KODADEK

*Jot down and recall your programming reminders with this instant-access utility.*

While computing, how often do you have to spend time looking up Poke, Peek or SYS numbers because you forgot them? Or how often have you had an idea you wanted to write down quickly but were unable to find a pencil or paper handy? If you're like me, you end up making a lot of mental notes, then forgetting them.

With the accompanying program, 64 Notepad (Listing 1), you have an electronic pad, pencil and eraser at your fingertips.

The program adds a text window to your screen. The window has editing capability and does not affect your present screen. You can access it at the touch of a key, open and use it even while another program is running. When you close the window, your program continues without missing a byte, and your notes are safely stored in a memory that never forgets.

### *About the Program*

Type in and save the Basic loader program (Listing 1). After running the program, press the CTRL-O key combination to open the window. When it first opens, the notepad will be filled with garbage; simultaneously press the shift and CLR/home keys to clear it. The notepad consists of 15 lines, each 38 spaces long. You may change your text color within the window by pressing CTRL-P.

The home, return, cursor and delete keys function as you would expect. The insert key, however, is disabled.

To close the window and return to the previous display, press CTRL-C. Simultaneously press the run/stop and restore keys to disable the utility. To restart, simply enter SYS 51072.

The IRQ vector has been altered to point to the Notepad routine, which checks about 60 times a second for the current key being pressed. When you press CTRL-O, the screen memory, color memory and zero-page are copied under the Basic ROM at 40960 ($A000). By using this area of free RAM for storage, all of Basic memory will be available for your other programs.

Next, after switching out the Basic ROM, the text window stored at 45056 ($B000) is copied to screen memory and instantly displayed. The program then enters a custom input routine, complete with cursor, awaiting your input.

When CTRL-C is pressed, the text window is moved back into its safe place under the Basic ROM, and all memory is restored to its original location. The routine ends with a jump to 65212 ($FEBC), which cleans everything up neatly.

### *Use with RUN Basic*

This program can be used with Robert Rockefeller's RUN Basic (see p. 50). To use with RUN Basic, follow these procedures.

1. Load RUN Basic, then enter SYS 64738 to activate RUN Basic.

2. Load and run 64 Notepad. Enter SYS 51072 to activate it and enter information pertinent to the use of RUN Basic. Whenever you need to refer to programming information from within RUN Basic, simply press CTRL-O to open the notepad; to close it, press CTRL-C.

If you want to print out your notes, you may do so using *RUN*'s previously published screen dump utility (see "Print Your Screen," December 1984), which runs concurrently with Notepad, as does *RUN*'s 64 Perfect Typist checksum utility, the DOS wedge or any program that doesn't conflict with the memory area from 51072 to 51852.

Now get busy and take some notes! R

*Address all author correspondence to Bob Kodadek, 3164 Surrey Lane, Aston, PA 19014.*

**RUN** It Right

C-64

Circle 15 on Reader Service card.

# Famous Comstar National Brand

# 10" Printer Sale

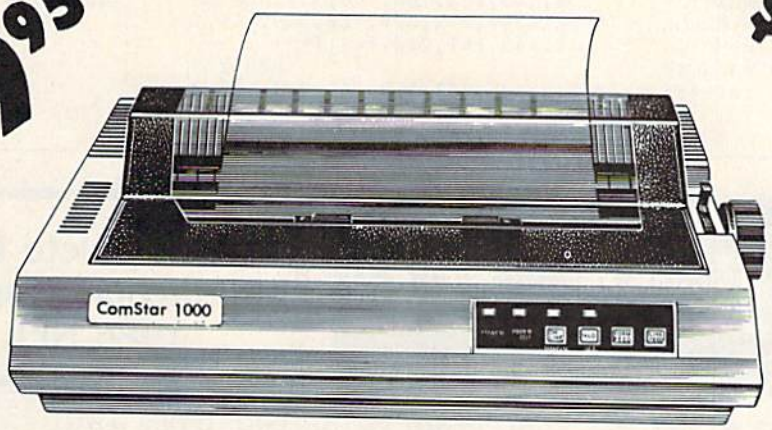
## Includes Commodore Interface

*Near Letter Quality* *Near Letter Quality*

## Best Value in the USA

**• 100 CPS draft/20CPS near-letter quality • Dot Addressable Graphics • Adjustable Tractor and Friction Feed • Automatic Paper Loading • Right and Left Margin settings • Pica, Elite, Condensed, Italics • Superscript • Subscript • Underline, Bold print, Double Strike • Superb NEAR LETTER QUALITY**

**$179.95** **$179.95**




**Easy to Use**

**Fantastic Graphics**

**2 Year Warranty**

The Comstar 1000 is one of the best values in the United States today. Print your letters, documents, programs, pictures, and more at a blazing 100 Characters Per Second or 20 cps in the Near Letter quality mode. ( Looks just like it came from a typewriter. ) Plus, choose your printing mode (NLQ, Draft) from your wordprocessor or by simply pushing the controls on the front panel. Fantastic Quality at a Fantastic Price. List $349.00 **SALE$179.95.**

**Print Method**
Serial impact dot matrix (9 pin)
**Print Speed**
Draft- 100 CPS NLQ- 20 CPS
**Character Sets**
96 ASCII Characters, Marker, Symbols (includes Italic font)

**Ribbon (Life exp.)**
Black: cassette (2.5 million characters)
**Dimensions**
15.4 (W) x 10.9 (D) x 4.7 (H) inch
**Weight**
Approx. 10 lbs
**Character Spacing**
Fixed

**Line Spacing**
1/6, 1/8, 7/72, and 1/216 inch
**Paper Feed**
Adjustable tractor and friction feed
**Paper feeding Direction**
Bi-directional
**Copies**
2 plus original

**Supply is Limited so Buy Today**

Add $10.00 for shipping, handling and insurance. Illinois residents please add 6% tax. Add $20.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, APO-FPO orders. Canadian orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES, EXCEPT CANADA.

Enclose Cashiers Check, Money Order or Personal Check. Allow 14 days for delivery. 2 to 7 days for phone orders, 1 day express mail!

VISA — MASTER CARD — C.O.D.

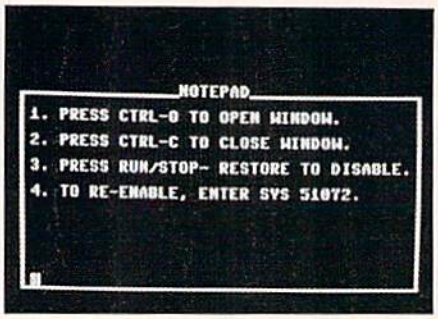
No C.O.D. to Canada, APO-FPO.

**PROTECTO**

*We Love Our Customers*

22292 N. Pepper Rd., Barrington, Illinois 60010

**312/382-5244 to order**


NOTEPAD
1. PRESS CTRL-O TO OPEN WINDOW.
2. PRESS CTRL-C TO CLOSE WINDOW.
3. PRESS RUN/STOP- RESTORE TO DISABLE.
4. TO RE-ENABLE, ENTER SYS 51072.

## Listing 1. *64 Notepad program.*

```
1 REM{2 SPACEs}*-- 64 NOTEPAD LO
  ADER PROGRAM --*          :REM*87
2 REM *-- BOB KODADEK, ASTON PA
  19014 --*                 :REM*88
3 PRINT"READING DATA, WAIT ABOUT
   TEN SECONDS...":ML=51072:FORI
  =ML TO ML+735             :REM*67
4 READ A:POKEI,A:CK=CK+A:NEXT:IF
  CK<>90927 THENPRINT"DATA ERROR
  !":END                    :REM*132
5 PRINTCHR$(147)SPC(255)"64 NOTE
  PAD"                      :REM*85
6 PRINTSPC(83)"1. PRESS CTRL-O T
  O OPEN WINDOW."           :REM*156
7 PRINTSPC(83)"2. PRESS CTRL-C T
  O CLOSE WINDOW."          :REM*237
8 PRINTSPC(83)"3. PRESS RUN/STOP
  -RESTORE TO DISABLE."     :REM*106
9 PRINTSPC(43)"4. TO RE-ENABLE,
  ENTER SYS 51072.":SYS 51072
                            :REM*65
10 DATA120,173,020,003,141,059,2
   02,173,021,003,141,060
                            :REM*246
11 DATA202,169,171,141,020,003,1
   69,199,141,021,003,162
                            :REM*177
12 DATA009,160,001,142,061,202,1
   40,063,202,140,062,202
                            :REM*174
13 DATA169,000,141,139,202,088,0
   96,173,141,002,201,004
                            :REM*125
14 DATA208,011,165,197,201,038,2
   08,005,173,139,202,240
                            :REM*230
15 DATA003,108,059,202,169,255,1
   41,139,202,032,231,255
                            :REM*217
16 DATA169,000,133,212,173,134,0
   02,141,064,202,120,032
                            :REM*120
17 DATA059,201,032,070,201,169,0
   64,133,251,169,186,133:REM*25
18 DATA252,162,000,160,039,169,1
   18,145,251,200,169,117
                            :REM*238
19 DATA145,251,165,251,024,105,0
   40,133,251,144,002,230:REM*91
20 DATA252,232,224,016,208,229,1
   62,039,169,111,157,064
                            :REM*180
21 DATA186,169,119,157,192,188,2
   02,016,243,162,016,160:REM*31
22 DATA000,185,089,202,056,233,0
   64,157,064,186,232,200
                            :REM*212
23 DATA192,007,208,241,032,141,2
   01,088,032,059,201,174
                            :REM*155
24 DATA061,202,172,062,202,024,0
   32,240,255,056,032,240
                            :REM*182
25 DATA255,152,201,040,048,003,0
   56,233,040,168,142,061
                            :REM*159
26 DATA202,140,062,202,032,011,2
   02,165,204,240,008,164:REM*12
27 DATA211,177,209,009,128,145,2
   09,032,228,255,240,239
                            :REM*209
28 DATA201,003,208,025,032,059,2
   01,032,117,201,032,199:REM*54
29 DATA201,173,064,202,141,134,0
   02,169,000,141,139,202
                            :REM*113
30 DATA133,198,076,188,254,201,1
   45,208,010,174,061,202:REM*26
31 DATA224,010,048,033,076,155,2
   00,201,017,208,009,174
                            :REM*163
```

→

Circle 119 on Reader Service card.

PIK'EM 86

★ ★ ★ ★

A Complete Pro Football Prediction Program For The 1986 NFL SEASON

61% + Accurate vs 'Spread' Since 1981
More Features — More Information In 1986 To . . . . . .

BEAT THE SPREAD

★ ★ FEATURES ★ ★

- Predicted Scores Each Week
- Season Schedule By Week/Team
- Records & Results:
  - Scores By Week
  - Scores By Team
  - Division Standings
  - Standings vs Line
  - Stats — Accumulated & Average
  - 1983-1985 Data Base
- Auto Opponent Input
- Printed Copy All Screens
- Easy Update—Playoffs/1987
- Dealer Inquiries Invited

54.95 INCLUDES DISK, DOCUMENTATION SHIPPING & HANDLING

- Apple II — IIc — IIe
- Commodore 64 — 128
- IBM PC, Tandy & Compatibles
- TRS-80 MIII/IV

Stats Needed To Run Program Available In Local Newspapers
Or
We Will Furnish Stats By Mail Or Modem All 20 Weeks — Season Price . . . 40.00

Program Comes Updated Thru Current Week Of Season . . . No Extra Charge

ORDERS SHIPPED IN 2 DAYS
PHONE LINES OPEN 24 HRS.

VISA C.O.D. MasterCard

TOLL FREE — 800-722-2277
TEXAS COLL. — 214-586-8212

MARATHON SOFTWARE DEPT. R
P. O. BOX 1349
JACKSONVILLE, TEXAS 75766

TOLL FREE & COLLECT FOR ORDERS ONLY

*Listing 1 continued.*

```
32 DATAØ61,2Ø2,224,Ø23,24Ø,Ø19,2
   Ø8,Ø11,2Ø1,157,2Ø8,Ø16
                          :REM*186
33 DATA172,Ø62,2Ø2,192,ØØ1,24Ø,Ø
   Ø6,Ø32,Ø59,2Ø1,Ø32,21Ø
                          :REM*151
34 DATA255,Ø76,Ø49,2ØØ,2Ø1,Ø19,2
   Ø8,ØØ9,Ø32,Ø59,2Ø1,Ø32
                          :REM*192
35 DATAØ5Ø,2Ø1,Ø76,Ø49,2ØØ,2Ø1,1
   47,2Ø8,ØØ6,Ø32,Ø16,2Ø1
                          :REM*165
36 DATAØ76,Ø49,2ØØ,2Ø1,Ø13,2Ø8,Ø
   2Ø,174,Ø61,2Ø2,224,Ø23
                          :REM*236
37 DATA24Ø,Ø1Ø,Ø32,Ø59,2Ø1,232,1
   6Ø,ØØ1,Ø24,Ø32,24Ø,255
                          :REM*171
38 DATAØ76,Ø49,2ØØ,2Ø1,Ø2Ø,2Ø8,Ø
   17,169,Ø32,164,211,145 :REM*4
39 DATA2Ø9,172,Ø62,2Ø2,192,ØØ1,2
   4Ø,189,169,157,2Ø8,179:REM*23
4Ø DATA2Ø1,Ø29,Ø48,181,2Ø1,127,Ø
   16,177,172,Ø62,2Ø2,192
                          :REM*252
41 DATAØ38,24Ø,ØØ2,2Ø8,162,174,Ø
   61,2Ø2,224,Ø23,24Ø,161
                          :REM*255
42 DATAØ32,Ø59,2Ø1,Ø32,21Ø,255,1
   6Ø,ØØ1,232,Ø24,Ø32,24Ø
                          :REM*132
43 DATA255,Ø76,Ø49,2ØØ,162,Ø23,1
   42,Ø61,2Ø2,174,Ø61,2Ø2:REM*71
44 DATA16Ø,ØØ1,Ø24,Ø32,24Ø,255,1
   62,Ø37,169,Ø32,Ø32,21Ø:REM*94
45 DATA255,2Ø2,Ø16,248,2Ø6,Ø61,2
   Ø2,173,Ø61,2Ø2,2Ø1,ØØ8
                          :REM*147
46 DATA2Ø8,227,162,ØØ9,16Ø,ØØ1,Ø
   24,Ø32,24Ø,255,Ø96,Ø72
                          :REM*218
47 DATA164,211,177,2Ø9,Ø41,127,1
   45,2Ø9,1Ø4,Ø96,162,ØØØ
                          :REM*185
48 DATA181,ØØØ,157,ØØØ,176,189,Ø
   ØØ,ØØ5,157,ØØØ,177,189:REM*2Ø
49 DATAØØØ,ØØ6,157,ØØØ,178,189,Ø
   ØØ,ØØ7,157,ØØØ,179,189 :REM*1
5Ø DATAØØØ,217,157,ØØØ,18Ø,189,Ø
   ØØ,218,157,ØØØ,181,189:REM*42
51 DATAØØØ,219,157,ØØØ,182,232,2
   Ø8,212,Ø96,162,ØØØ,189
                          :REM*223
52 DATAØØØ,ØØ5,157,ØØØ,186,189,Ø
   ØØ,ØØ6,157,ØØØ,187,189
                          :REM*156
53 DATAØØØ,ØØ7,157,ØØØ,188,232,2
   Ø8,235,Ø96,169,Ø54,133
                          :REM*113
54 DATAØØ1,162,Ø64,189,ØØØ,186,1
   57,ØØØ,ØØ5,173,Ø63,2Ø2:REM*24
55 DATA157,ØØØ,217,232,2Ø8,241,1
   62,ØØØ,189,ØØØ,188,157 :REM*1
56 DATAØØØ,ØØ7,189,ØØØ,187,157,Ø
   ØØ,ØØ6,173,Ø63,2Ø2,157
                          :REM*19Ø
57 DATAØØØ,218,157,ØØØ,219,232,2
   Ø8,232,141,134,ØØ2,141
                          :REM*165
58 DATA135,ØØ2,169,Ø55,133,ØØ1,Ø
   96,12Ø,169,Ø54,133,ØØ1:REM*76
59 DATA162,ØØØ,189,ØØØ,177,157,Ø
   ØØ,ØØ5,189,ØØØ,178,157:REM*57
6Ø DATAØØØ,ØØ6,189,ØØØ,179,157,Ø
   ØØ,ØØ7,189,ØØØ,18Ø,157
                          :REM*242
61 DATAØØØ,217,189,ØØØ,181,157,Ø
   ØØ,218,189,ØØØ,182,157:REM*77
62 DATAØØØ,219,232,2Ø8,217,162,Ø
   57,189,ØØØ,176,149,ØØØ:REM*54
63 DATA232,2Ø8,248,162,Ø42,189,Ø
   ØØ,176,149,ØØØ,2Ø2,2Ø8:REM*37
64 DATA248,Ø88,Ø96,173,141,ØØ2,2
   Ø1,ØØ4,2Ø8,Ø39,165,197
                          :REM*242
65 DATA2Ø1,Ø41,2Ø8,Ø33,16Ø,1ØØ,1
   62,ØØØ,232,2Ø8,253,2ØØ
                          :REM*117
66 DATA2Ø8,248,238,Ø63,2Ø2,173,Ø
   63,2Ø2,2Ø1,Ø16,2Ø8,ØØ5
                          :REM*18Ø
67 DATA169,ØØØ,141,Ø63,2Ø2,12Ø,Ø
   32,117,2Ø1,Ø32,141,2Ø1
                          :REM*181
68 DATAØ88,Ø96,ØØØ,ØØØ,ØØØ,ØØØ,Ø
   ØØ,ØØØ,ØØØ,Ø66,Ø79,Ø66
                          :REM*144
69 DATAØ75,Ø79,Ø68,Ø65,Ø68,Ø69,Ø
   75,Ø44,Ø65,Ø83,Ø84,Ø79
                          :REM*157
7Ø DATAØ78,Ø44,Ø8Ø,Ø65,Ø67,Ø49,Ø
   57,Ø56,Ø53,Ø78,Ø79,Ø84:REM*84
71 DATAØ69,Ø8Ø,Ø65,Ø68    :REM*37
```

end R


commodore 128 PERSONAL COMPUTER $259.95
•Including: Shipping, Handling and Insurance—No Extra Charges
• INCLUDES DELIVERY

SP-1000
- Built-in Commodore Interface
- 2-Year Warranty
- Near Letter Quality Mode

$169.95
SEIKOSHA
LIMITED TIME ONLY
SPECIAL INTRODUCTORY PRICE

COSMI
WHERE THE ACTION IS
FOR COMMODORE 64/128
SUPERHUEY
TALLADEGA
FORBIDDEN FOREST ...$12.95
CMS
FOR 128 COMMODORE
PERSONAL COMPUTER
SPREAD SHEET
BOOK PACKAGE.....$134.95
VOLKS MODEMS
6480/1200 BPS .....$119.95
6420/300 BPS .....$54.95

IN NEW YORK STATE CALL TOLL FREE
1-800-221-2760 or 516-349-1020
OR WRITE: COMPUTER CENTERS OF AMERICA
81 TERMINAL DRIVE, PLAINVIEW, NY 11803

BACK TO SCHOOL SPECIALS!

BACK TO SCHOOL SPECIAL!
•COMMODORE 128•COMMODORE 1571
•RGB/COMPOSITE•COLOR MONITOR
$729.95
• INCLUDES DELIVERY

commodore 1571 DISC DRIVE
$249.95
•Including: Shipping, Handling and Insurance—No Extra Charges
• INCLUDES DELIVERY

MEMOREX WORK STATION SCHOOL SPECIAL!
20 DISKS/ DISK CASE...$19.95

INTERFACES
XETEC SENIOR/ 8K BUFFER..$64.95
XETEC JR ...$49.95
PPI .....$39.95

COMPUTER
COMPUTER CENTERS OF AMERICA
81 TERMINAL DRIVE
PLAINVIEW, NY 11803
1-800-631-1003
1-800-548-0009

commodore 64 PACKAGE
INCLUDES:
•Commodore 64 Computer
•Commodore 1541 Disc Drive
• A Color Monitor with Cables
CALL FOR PRICE

epyx $24.95
• INCLUDES DELIVERY
Karate
Kronis Rift - Lucas Games
Eidolon - Lucas Games
Ballblazer - Lucas Games
Rescue Fractalus - Lucas Games
Fastload
Wintergames
Hot Wheels
Temple of Asphai
Trilogy
Jet Combat Simulator
GI Joe
Summer Games I or II
Barbie
Baseball

PAPERBACK FOR COMMODORE 128
PAPERBACK WRITER 128
PAPERBACK FILER 128
PAPERBACK PLANNER 128.....$24.95
PROFESSIONAL FLEET SYSTEM 2
THE LARGEST SPELL CHECKER AVAILABLE FOR YOUR COMPUTER
90,000 WORDS ON C-641-128
70,000 WORDS ON ATARI ..$59.95
FLEET SYSTEM 3 NEW
FOR COMMODORE 128.....$64.95

Check, Money Order, MC or VISA accepted. No additional charge for MasterCard and Visa. Call for shipping and handling information/NYS residents add applicable sales tax/Prices and availability are subject to change without notice/All factory fresh merchandise with manufacturer's warranty. Dealers Welcome. Call for recent price reductions and new rebate information. Plus shipping and handling. No returns without return authorization number.
• IN CONTINENTAL USA ONLY. APO FPO EXTRA.

# Sign Maker

*If you have something to say, say it in a big way—with a sign. This program lets you make and print out signs quickly and easily.*

By KEN AMBERG

I own a printer that has an Enlarge mode for printing larger characters. The Enlarge mode is nice, but I wanted letters big enough to be visible across a room.

Sign Maker prints characters in two ways. One format produces the largest letters and prints them sideways down the paper, banner style, up to 40 characters high. The other format prints smaller characters on a standard 8½- by 11-inch sheet of paper.

The menu appears on the screen after you load and run the program. Press the f1 key to use the banner maker. Press the f3 key to use the single-sheet sign maker. The f5 key prints a forms-feed character and the f7 key ends the program and closes the print file.

To make a sign, simply answer the different questions the program asks.

### *How the Program Works*

Sign Maker runs on the C-64, the C-128 and the VIC-20. You can tailor it to fit your own needs and printer.

Lines 10–30 determine which computer the program is running on and set variables accordingly.

Lines 100–230 open the print file and produce the menu screen. The logic flow of the program is controlled from this section.

Lines 500–560 control the banner print and call on lines 1000–1160 to translate the screen character memory into enlarged print characters.

Lines 2000–2090 are used only by the C-64. They move the C-64's character memory to an area that can be accessed by the program. (These and line 20 can be deleted if you use the VIC-20.)

Lines 3000–3070 constitute a routine that translates ASCII values into character memory positions.

Lines 4000–4170 accept the data for the Single Sheet mode and vertically center the print on the paper. Lines 5000–5150 examine the data line by line, character by character, and determine horizontal centering.

Lines 6000 to the end of the program translate the screen character memory into a printer character.

I've found plenty of uses for this little printer utility program. It's great for birthday messages and greetings, and my family always sees the notes I leave on the refrigerator. Experiment with this program; it could breathe new life into your printer, which is useful for more than just making program listings and reports. R

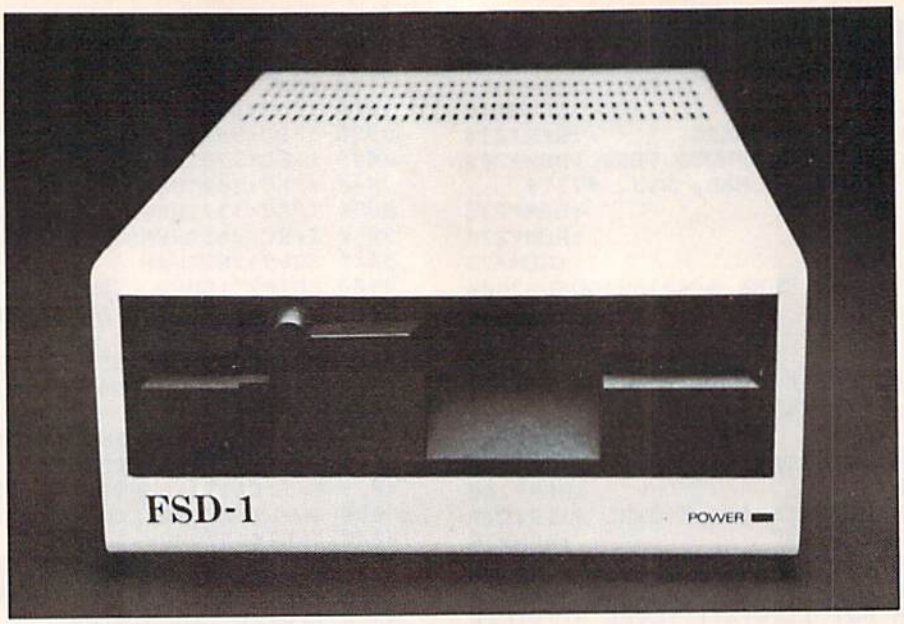
*Address all author correspondence to Ken Amberg, 1832 Briarwood Terrace, South Belmar, NJ 07719.*

**RUN** It Right

*C-64; C-128 (in C-64 mode); VIC-20*
*Printer*

## Listing 1. *Sign Maker program.*

```
1 REM{2 SPACEs}SIGN MAKER                    :REM*15
2 REM{3 SPACEs}BY KEN AMBERG                 :REM*234
3 REM{6 SPACEs}1832 BRIARWOOD TERR.          :REM*209
4 REM{6 SPACEs}SOUTH BELMAR, N.J. 07719      :REM*236
10 DIM A(7)                                  :REM*224
15 DIM B(8,8)                                :REM*23
20 IF PEEK(213) = 39 THEN S=49152:GOSUB2000  :REM*198
   :Z=10:GOTO 100
30 Z=2:S=32768                               :REM*98
100 OPEN 4,4                                 :REM*204
110 PRINT "{SHFT CLR}"                       :REM*100
120 PRINT"{3 CRSR DNs}";TAB(Z+5);"SIGN MAKE  :REM*162
   R"
130 PRINT"{CRSR DN}";TAB(Z);"{CTRL 9}F1{CTR  :REM*240
   L 0} = BANNER"
140 PRINT"{CRSR DN}";TAB(Z);"{CTRL 9}F3{CTR  :REM*36
   L 0} = SINGLE PAGE"
150 PRINT"{CRSR DN}";TAB(Z);"{CTRL 9}F5{CTR  :REM*72
   L 0} = FORM FEED"
160 PRINT"{CRSR DN}";TAB(Z);"{CTRL 9}F7{CTR  :REM*244
   L 0} = EXIT PROGRAM"
170 GET A$:IFA$=""THEN170                    :REM*240
180 IF A$<"{FUNCT 1}" OR A$>"{FUNCT 7}" THE  :REM*126
   N 110
190 IF A$="{FUNCT 7}" THEN PRINT#4:CLOSE4:E  :REM*52
   ND
200 IF A$="{FUNCT 5}" THEN PRINT#4,CHR$(12)  :REM*180
   :GOTO110
210 IF A$="{FUNCT 1}" THEN GOSUB 500:GOTO11  :REM*238
   0
220 IF A$="{FUNCT 3}" THEN GOSUB 4000:GOTO1  :REM*40
   10
230 GOTO 110                                 :REM*176
500 PRINT"{SHFT CLR}"                        :REM*235
510 PRINT"PLEASE ENTER PHRASE"               :REM*193
512 PRINT" TO BE PRINTED"                    :REM*28
515 INPUT A$                                 :REM*103
520 LP=LEN(A$)                               :REM*130
530 FOR C=1TOLP                              :REM*38
540 GOSUB 1000                               :REM*244
550 NEXT C                                   :REM*76
560 RETURN                                   :REM*108
1000 L1$="{20 SPACEs}"                       :REM*201
1010 X$=MID$(A$,C,1)                         :REM*207
1011 SC=ASC(X$)                              :REM*14
1012 GOSUB3000                               :REM*221
1015 CS = S + (SC * 8)                       :REM*214
1020 FOR I = 0TO7                            :REM*71
1030 A(I)=PEEK(CS+I)                         :REM*38
1040 NEXT                                    :REM*30
1050 FOR BIT = 7TO0STEP-1                    :REM*184
1060 FOR BYTE = 7TO0 STEP-1                  :REM*124
1070 IF (A(BYTE) AND (2{UP ARROW}BIT)) THEN  :REM*142
    GOTO 1100
1080 L1$=L1$+"{6 SPACEs}"                    :REM*194
1090 GOTO 1110                               :REM*60
1100 L1$=L1$+"******"                        :REM*154
1110 NEXT BYTE                               :REM*232
1120 PRINT#4,L1$                             :REM*18
1130 PRINT#4,L1$                             :REM*28
1145 L1$="{20 SPACEs}"                       :REM*91
1150 NEXT BIT                                :REM*188
1160 RETURN                                  :REM*198
2000 PRINT:PRINT"I AM MOVING THE CHARACTER   :REM*143
   SET"
2010 PRINT"IT TAKES A MINUTE.....":REM*249
2020 POKE56334,0                             :REM*47
2030 POKE1,51                                :REM*145
2040 FOR A=0TO2047                           :REM*249
2050 POKE49152+A,PEEK(53248+A)               :REM*22
2060 NEXTA                                   :REM*40
2070 POKE1,55                                :REM*188
2080 POKE56334,129                           :REM*0
2090 RETURN                                  :REM*108
3000 IFSC<32THENSC=128:RETURN                :REM*33
3010 IFSC<64THENRETURN                       :REM*173
3020 IFSC<96THENSC=SC-64:RETURN              :REM*43
3030 IFSC<128THENSC=SC-32:RETURN             :REM*217
3040 IFSC<160THENSC=128:RETURN               :REM*255
3050 IFSC<192THENSC=SC-64:RETURN             :REM*111
3060 IFSC<255THENSC=SC-128:RETURN            :REM*241
3070 SC=94:RETURN                            :REM*127
4000 PRINT"{SHFT CLR}"                       :REM*165
4002 PRINT"{2 CRSR DNs} ENTER UP TO 5 LINES  :REM*21
   "
4003 PRINT" 8 OR LESS LETTERS"               :REM*34
4004 PRINT"{2 SPACEs}PER LINE"               :REM*9
4005 L1$=""                                  :REM*162
4010 INPUT"ENTER LINE 1";L1$                 :REM*135
4020 IFL1$=""THEN RETURN                     :REM*85
4025 L=1:L$(1)=LEFT$(L1$,8):L1$=""           :REM*196
4030 INPUT"ENTER LINE 2";L1$                 :REM*29
4040 IFL1$=""THEN 4100                       :REM*147
4045 L=2:L$(2)=LEFT$(L1$,8):L1$=""           :REM*234
4050 INPUT"ENTER LINE 3";L1$                 :REM*177
4060 IFL1$=""THEN 4100                       :REM*167
4065 L=3:L$(3)=LEFT$(L1$,8):L1$=""           :REM*16
4070 INPUT"ENTER LINE 4";L1$                 :REM*69
4080 IFL1$=""THEN 4100                       :REM*187
4085 L=4:L$(4)=LEFT$(L1$,8):L1$=""           :REM*54
4090 INPUT"ENTER LINE 5";L1$                 :REM*217
4095 IFL1$=""THEN4100                        :REM*202
4097 L=5:L$(5)=LEFT$(L1$,8)                  :REM*75
4100 W=12*L                                  :REM*180
4110 W1=INT((60-W)/2) + 5                    :REM*128
4120 FOR W = 1 TO W1                         :REM*66
4130 PRINT#4," "                             :REM*86
4140 NEXT                                    :REM*70
4150 FOR X ={2 SPACEs}1 TO L                 :REM*176
4160 GOSUB 5000                              :REM*70
4165 NEXT                                    :REM*95
4170 RETURN                                  :REM*148
5000 LL=LEN(L$(X))                           :REM*181
5010 FOR X1 = 1 TO LL                        :REM*89
5020 W$= MID$(L$(X),X1,1)                    :REM*185
5030 SC = ASC(W$)                            :REM*81
5040 GOSUB3000                               :REM*169
5050 CS=S+(SC*8)                             :REM*169
5060 FOR X2 = 0 TO 7                         :REM*175
5070 B(X1,X2)=PEEK(CS+X2)                    :REM*233
5080 NEXT X2                                 :REM*219
5090 NEXT X1                                 :REM*213
5100 LC=INT((80-(LL*10))/2)                  :REM*195
5110 PL$=""                                  :REM*223
5115 IF LC=0THEN5150                         :REM*246
5120 FOR X1 = 1 TO LC                        :REM*182
5130 PL$=PL$+" "                             :REM*186
5140 NEXT                                    :REM*50
5150 SL$=PL$                                 :REM*216
6000 FOR X2=0 TO 7                           :REM*95
6010 FOR X1=1 TO LL                          :REM*69
6020 FOR BIT=7 TO 0 STEP -1                  :REM*53
6030 IF(B(X1,X2) AND (2{UP ARROW}BIT)) THEN  :REM*249
    6045
6040 PL$=PL$+" ":GOTO 6050                   :REM*107
6045 PL$=PL$+MID$(L$(X),X1,1)                :REM*48
6050 NEXT BIT                                :REM*243
6060 PL$=PL$+"{2 SPACEs}"                    :REM*131
6070 NEXT X1                                 :REM*173
6080 PRINT#4,PL$                             :REM*205
6090 PL$=SL$                                 :REM*59
6100 NEXT X2                                 :REM*219
6110 PRINT#4," "                             :REM*25
6120 PRINT#4," "                             :REM*35
6130 PRINT#4," "                             :REM*45
6140 PRINT#4," "                             :REM*55
6150 RETURN                                  :REM*88
```




# The FSD-1 Disk Drive—a Viable Alternative

By BILL RUDDICK

*Here's a new, low-cost disk drive that offers improvements over the Commodore 1541.*

The 5¼-inch FSD-1 disk drive from Emerald Component International is another Commodore 1541 disk drive emulator that's touted by the manufacturer to work better than the 1541. Having had experience with such claims before, I was not optimistic as I opened the box. However, testing of the FSD-1 has convinced me that this drive does measure up to the 1541 and in some respects is superior. I like it so much, in fact, that I now own three of them.

### *Opening the Boxes*

As I perused the accompanying literature, I was pleased to discover that the FSD-1 does not offer super-enhanced features that usually destroy compatibility with commercial software, nor does it attempt to reinvent data-communication logic.

When I slipped the first FSD-1 from its carton, I was glad to find it made of metal rather than plastic. Metal is more durable than plastic, tends to disperse heat better and blocks radio-frequency interference more effectively.

The Emerald drive has an attractive design, and, at 6⅜ × 13 × 2¾ inches, is smaller than the 1541. Its white-with-brown color goes well with the C-128 and the new 64C, but clashes somewhat with the C-64. It has a lever drive door similar to late model 1541s and the 1571.

When I turned the drive upside down, I was pleased to find a dip switch bank similar to that on the Commodore 1571. Owners of 1541s have to change device numbers via software, which is temporary, or by disassembling the drive and installing a switch, which is a risky undertaking for the inexperienced and voids the warranty. I thought how nice it would be to use these easily switchable drives with my four-drive bulletin board system. The FSD-1 also has the two standard nine-pin serial ports on the back to allow for drive chaining or printer interfacing.

### *Software Tests*

For my first test of the FSD-1, I connected two of them to my bulletin board, one for the main message base and one for on-line software transfer. After 72 hours of non-stop operation, the drives were working flawlessly. All my relative-based message files were intact. New records were added to the files and old records purged without a single error, and the drives remained cool.

Next I loaded and ran some commercial business programs, including

# Sensational Prices!
## . . . On Our Most Popular Items!

*from* microfal® . . .

## THE 59¢ DISKETTE!

Are you paying too much for diskettes? Try our first quality, prime, 5¼" diskettes (no rejects, no seconds) at these fantastic sale prices and save, save, SAVE! Disks are packaged in boxes of 50; each box contains 5 shrink-wrapped 10-packs that include diskettes in sleeves, labels, and write-protect tabs.

Each diskette is certified to be 100% error free and comes with a lifetime warranty (if you have a problem, we'll replace the diskette). All diskettes include hub reinforcement rings and write-protect notch.

All diskettes are double density and work in either single or double density drives.

SS, DD Diskettes, Box of 50
**32391** **$29.50–59¢ ea.!**

DS, DD Diskettes, Box of 50
**32403** **$34.50–69¢ ea.!**

## $ LOWEST PRICES IN U.S.A.! $

Star Micronics, Inc.

BMC AXIOM INDUS
EPSON CARDCO

We can offer you some of the lowest prices in the country on the most popular printers, monitors and interfaces. Our normal prices are already low, but to make sure you get the best deal you can, we will also meet most competitive prices in this publication when placed on an equal basis *(Remember—we don't charge for use of your credit card, impose excessive shipping fees, or use any other hidden extras to boost the price you pay. Due to the rapid change in prices in the computer industry, we can only meet prices at the time you place your order; we cannot adjust prices on items ordered or shipped on an earlier date.)* Another plus for charge card customers — your charge card is billed at time of shipment only for the items shipped — no early billing, no long wait for the merchandise you already paid for.

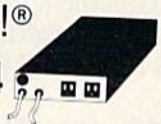
| | | | | | |
|---|---|---|---|---|---|
| **COMMODORE** | | **STAR MICRONICS** | | **FAMOUS NAME SOFTWARE** |
| C-128™ Computer | $CALL | NX-10 | $CALL | Epyx |
| 1571 Disk Drive | $CALL | SG-10C | $CALL | Broderbund |
| 1902 Monitor | $CALL | **CARDCO** | | Infocom |
| 1670 Modem | $CALL | G-Wiz Interface | $CALL | Sierra |
| **EPSON** | | S'MORE | $CALL | Timeworks |
| FX-85 | $CALL | Super-G | $CALL | Random House |
| FX-286 | $CALL | | | Activision, and many more! |

★ THE BEST PRICES ★
★ THE BEST SERVICE ★
WHY SHOP ANYWHERE ELSE?

**COMMODORE-READY PRINTER** — ONLY $114.95!
**Fastext 80**
80-column dot-matrix printer from Smith-Corona includes interface/cable (no other interface needed), 80 cps, bi-directional printing, friction feed (tractor optional), six character sizes, some graphics capabilities.

**41740** Fastext 80 Printer $114.95
**41755** Tractor for Fastext 80 $19.95

## POWER and PROTECTION FOR YOUR C-64!®



## POW'R PAK 64

Pow'r Pak is a replacement power supply (1.5 amp) for the Commodore 64® . . . but that's not all! Pow'r Pak also supplies two additional surge protected outlets (120V) for monitor, disk drive, or other peripherals. On/off switch. Fuse protection. Sturdy all-metal casing is ventilated for heat dissipation. Full 1 year warranty.

**34910** **$49.95**

## 80-COLUMNS ON YOUR COMPOSITE MONITOR!

**Switch Selectable**

Our new cable connects your C-128 to any color or monochrome monitor and lets you switch-select 40-column color (color monitor only), or 40-column monochrome, or 80-column monochrome. A great way to use 80-columns on the C-128 without the expense of an RGB monitor! No other cable required.

**40771** . . . . . $24.95

## OUR BEST MONITOR VALUE EVER!

The black matrix picture tube on this 14" composite monitor provides impressive color . . . rich blacks, vivid colors and brilliant whites. Includes built-in audio speaker; controls for volume, brightness, contrast, color, tint and sharpness. One year warranty on parts and labor, 2 years on picture tube. From Samsung. Supply Limited! Order Today!

**$149.95**

**40728** . . . . . $149.95

Monitor Cable (required). Works with C64, C128 (in composite mode), TI 99/4A and many others.

**37424** . . . . . $7.95

## CARTRIDGE EXPANDER

**Plus $22.95 *FAST LOAD* OFFER!**

Stop wearing out your computer by endless cartridge swapping! The Navarone cartridge expander features 3 cartridge slots. Reset the computer independently of the power switch. Cartridge slots are vertical for easy access — no blind fumbling behind the computer.

**33227** 3-slot Cartridge Expander **$22.95**

The cartridge expander is a great companion for the Epyx Fast Load cartridge — you can keep it permanently installed plus have two sides free for other cartridges!

**34216** Fast Load Cartridge (Sug. Retail $39.95) **$24.95**

***Fast Load Only $22.95 with purchase of cartridge expander!***

## DUST COVER and "EVERYTHING BOOK" SPECIAL OFFER

Get to know us by ordering this great dust cover for your C-64 or C-128 and our catalog, "The Everything Book for the C-64 and C-128 Home Computers," for $2.95 (no extra shipping and handling charges). Cover is antistatic, translucent 8-gauge vinyl sewn to our exacting standards with reinforced seams. Discover the savings and easy shipping available from TENEX Computer Express!

**$2.95**

**31627** C-64 Dust Cover and Catalog (R1V)
**38464** C-128 Dust Cover and Catalog (R1V)

## The Right Interface For All Your Printing Needs!!

**PPI** with graphics — "*. . . a sound investment for your Commodore.*" RUN, *Dec. '85* This high-performance graphics parallel printer interface from DSI for C-64 and VIC-20 emulates a Commodore printer. Comes with cables and user's manual.

**33565** . . . . . $39.95

**G-Wiz interface** Built-in buffer provides super high-speed printing for parallel printers. Prints all Commodore characters. Cables and connectors included. From Cardco. Lifetime warranty.

**34484** . . . . . $CALL

**SUPER-G** This upgrade to the G-Wiz offers more speed, large buffer, and an 18" ribbon cable. From Cardco. Lifetime guaranty.

**40502** . . . . . $CALL

*From Your Friends At*
TENEX Computer Express™

*We gladly accept mail orders!*
P.O. Box 6578
South Bend, IN 46660

**Questions? Call 219/259-7051**

Ad R1V

**SHIPPING CHARGES**

| ORDER AMOUNT | CHARGE |
|---|---|
| less than $20.00 | $3.75 |
| $20.00–$39.99 | 4.75 |
| $40.00–$74.99 | 5.75 |
| $75.00–$149.99 | 6.75 |
| $150.00–$299.99 | 7.75 |
| $300 & up | 8.75 |

MasterCard VISA

**NO EXTRA FEE FOR CHARGES**

*WE VERIFY CHARGE CARD ADDRESSES.*

**ORDER TOLL FREE**
**1-800-348-2778**

COMMODORE 64 is a registered trademark; and COMMODORE 128 is a trademark of Commodore Electronics, Ltd.

# ReRUN • SPECIAL OFFER • 30% off!

# ADD POWER, ADD VALUE

## TO YOUR C-64 OR C-128* by adding *all* the top rated programs from RUN!

*Get business and home applications . . . telecommunications . . . utilities . . . games . . . graphics . . . music . . .*

***All on ready-to-run quality disks!***

Now you can get *all* the valuable programs—not just selected programs—published in RUN magazine with Bi-Monthly ReRUN. Each super disk is packed with two months' worth of top rated programs for your Commodore. Here is a low-cost treasure trove of helpful and interesting applications, productive utilities and enjoyable, challenging games, all ready-to-run on quality disks you can just load and go!

**YES!** I want to add power and value to my Commodore. Send me:

- ☐ Full year (6 issues) subscriptions to ReRUN for $89.97—a full 30% off the single issue price.
- ☐ May/June ReRUN (11 programs) just $21.47.
- ☐ July/August ReRUN (9 programs) just $21.47.
- ☐ September/October ReRUN (10 programs) just $21.47.
- ☐ Payment enclosed ☐ VISA ☐ AE ☐ MC

Card # _____ Exp. Date _____

Signature _____

Name (print) _____

Address _____

City _____ State _____ Zip _____

Foreign airmail, please add $1.50 per item or $25 per subscription. US funds drawn on US banks only. Please allow 4–6 weeks for delivery. May/June Edition Available in June 1986.

Pre-payment orders *only*!

**Mail to: ReRUN • Elm Street • Peterborough, NH 03458**

9-86

### Exclusive, BONUS PROGRAM, too!

As an extra BONUS, each ReRUN Bi-Monthly disk features a previously unpublished program, specially selected by RUN experts to update your Commodore software library. The high-quality program is included FREE on every ReRUN Bi-Monthly disk.

### Put RUN Quality Programs to Work for You, INSTANTLY!

Here's the ideal way to multiply the value of RUN magazine to you, while you increase the value of your Commodore for your business, home, education and entertainment computing needs. No need to spend hours keyboarding RUN program listings, and fixing your typing errors. Now the programs you want are all right here on bug-free disks, ready to run! Each issue comes with its own color documentation booklet, so you can boot up in just minutes!

### Get All Six Bi-Monthly Disks and SAVE 30% OFF!

Enter your subscription now to receive all six ReRUN Bi-Monthly disks, and you'll *save a full 30% off* the single issue price, making this one of the best software bargains in the industry! You'll get all six disks for just $89.97, including postage and handling. Or, order ReRUN disks individually at $21.47 per disk.

Top rated programs . . . plus 30% savings off the single issue price. Two good reasons to get ReRUN Bi-Monthly working for you all year long! Complete the coupon and mail today or call ☎ 1-800-258-5473 (in NH, Dial 1-924-9471).

*Includes 128 Mode programs

| | FSD-1 | 1541 |
|---|---|---|
| 1541 DOS compatible | yes | yes |
| Loads protected software | yes | yes |
| C-128 compatible in 64 mode | yes | yes |
| Save with Replace capability | yes | no |
| R/W head stays aligned | yes | no |
| Switchable device number | yes | no |
| Storage capacity in K | 174 | 174 |
| Buffer capacity in K | 2 | 2 |
| Bytes per sector | 256 | 256 |
| Directory entries per disk | 144 | 144 |
| Tracks | 35 | 35 |
| Format time in seconds | 90 | 90 |
| Speed in RPM | 308 | 308 |
| Consistent speed | yes | no |
| Power supply in watts | 25 | 25 |
| Metal case | yes | no |
| Price (suggested retail) | $139 | $199 |
| Warranty | 6 months | 90 days |

**Table 1.** *Comparison of the FSD-1 and Commodore's 1541 drives.*

Superbase 64, PaperClip, The Consultant, MultiPlan, Calc-Kit, Practi-Calc, The Financial Cookbook, Net Worth and The Complete Personal Accountant. They all ran without a hitch, handling both the program and data files efficiently.

Moving on to my game library, I loaded and ran Impossible Mission, Winter Games, Sword of Fargoal, Jumpman and several others from Epyx with the FSD-1, and they all worked well. I noticed that when protection errors occurred, the read/write head clattered, but not as loudly as that of the 1541. Sky Fox, Adventure Construction Set, One on One and Archon I and II from Electronic Arts also loaded properly. The Adventure Construction Set actually seemed to load faster than it does on the 1541.

After testing a plethora of commercial games, I was convinced the FSD-1 is compatible with a majority of copy-protected commercial software. It also loaded all the Basic and machine-language programs I fed it, and the Save with Replace command worked flawlessly.

I did discover that the FSD-1 shares the 1541's slow disk accessing and formatting times, and it uses the same peculiar DOS commands as the 1541—for the purpose, I assume, of reading the 1541 software protection schemes. The manual is light on information in some of the areas, but is relatively error-free.

I would recommend against following the FSD disk-operating command structure, as it is far too long. Instead, you can use the standard 1541 format or the 1541 wedge. Also, the FSD-1 works with the Mach 5 fast-load cartridge from Access and the Fast Load cartridge from Epyx, both of which contain improved, one-key commands that are easy to use.

### *Hardware Tests*

The hardware diagnostic tests I performed on my three FSD-1s, using C-64 Doctor, CSM's 1541 Alignment Utility and the DUCK Utility, produced favorable results. Speed was consistent, track formatting was true, and the diagnostic data did not deviate between the three units.

To summarize, the FSD-1 certainly surprised me, because I've been disappointed by 1541 emulators in the past. It operates identically to the 1541 in reading, writing, saving and error-handling. It appears to be superior to the 1541 in hardware design, because it runs cooler and more quietly.

I have confidence in the FSD-1's C-64 software compatibility, because it loaded every program I tested. It also supported all the fast-load software I tried.

To top things off, at $139 the price is right, and the FSD-1 carries a six-month warranty, a real pleasure in these days of 90-day limits.

Emerald deserves kudos for offering a truly viable alternative to the 1541. For more information on the FSD-1 disk drive, write to Emerald Component International, 541 Willamette St., Eugene, OR 97401. R

*Address all author correspondence to Bill Ruddick, Micro Systems Services, 1967 Fircrest Drive, Eugene, OR 97403.*


**DUST COVERS**

★ CUSTOM MADE TO FIT
★ Heavy 32-oz. VINYL ANTI-STATIC
★ EXTENDS EQUIPMENT LIFE
★ Choice of Colors Lt. Tan or Brown

COMPUTERS
C-64; VIC-20; C-16; Plus 4 ..... 8.00
C-128, B-128 ..... 13.00
DATASSETTE (NEW, C2N) ..... 5.00

DISK DRIVES
C-1541; C-1571 INDUS GT ..... 8.00
MSD S/D; APPLE S/D ..... 8.00
MSD D/D; APPLE D/D UNIT ..... 10.00
ENHANCER 2000 ..... 8.00

PRINTERS
C-1525/MPS801 ..... 10.00
C1526/MPS802 ..... 13.00
C/MPS 803; C-1520 ..... 8.00
PANASONIC KX-P1090/91 ..... 13.00
EPSON MX/RX/FX 80 ..... 13.00
GEMINI 10 & STAR 10's ..... 13.00
GEMINI 15 & STAR 15's ..... 16.00
OKIDATA 91/92 ..... 13.00
OKIMATE 10 ..... 8.00

MONITORS
C-1702 ..... 16.00
C-1902/AMIGA ..... 19.00
ZENITH ZVM 122/123 ..... 16.00
AMDEK COLOR I, 500/700 ..... 19.00
TEKNIKA MJ 10/22 ..... 19.00
CM-141 ..... 19.00
BMC COLOR ..... 16.00
VIDEO RECORDERS ..... 13.00
(Dimensions Required)

Order by stating NAME and MODEL and COLOR CHOICE TAN or BROWN.
Enclose check or money order plus $1.50 per item (4.50 max.) shipping and handling. California Res. Include 6.5% Sales Tax.

SPECIAL COVERS WILL BE MADE TO YOUR DIMENSIONED SKETCH. SEND YOUR REQUIREMENTS FOR OUR LOW PRICE QUOTES

**Crown Custom Covers**
9606 SHELLYFIELD RD., Dept. B
DOWNEY, CA 90240
(213) 862-8391

Circle 144 on Reader Service card.

Free Spirit Software, Inc.

**Music of the Masters** - Classical music for the C64* or C128* in 64 mode. Approx. 1 hour of music per disk with comments on the composers.
**Volume I** - Mozart's Rondo Alla Turca, Beethoven's Sonata Pathetique and 20 other works by Bach, Handel & many others.
**Volume II** - Beethoven's Minuet in G, Bach's Invention No. 4, and 40 other works by Brahms, Schubert, Chopin & others.
**Volume III** - Mostly Mozart. Overture from Figaro, Sonata Facile, Minuet from Don Giovanni and many other Mozart compositions.
$9.95 per volume. All 3 volumes - $24.95

**The Great War** - WWI strategy game for the C128* in 128 mode. Includes one or two player options. Armies of 17 countries. Weather, terrain, lines of supply, etc. affect the outcome. C128* disk only - $29.95

**BASICally SIMPLE 128** - How to use all C128* Basic 7.0 commands, functions and operators in Basic programs. C128* disk only - $19.95
**BASICally SIMPLE 64** - How to use all C64* Basic 2.0 commands, functions and operators in Basic programs. Disk - $14.95

**Datafiler 128** - Database program for the C128* in 128 mode. Disk - $24.95

FREE SHIPPING & HANDLING. Illinois residents add 7% sales tax. Send check or money order to:

Free Spirit Software, Inc.
538 S. Edgewood
LaGrange, IL 60525

*Trademarks of Commodore Electronics, Ltd.

# Instant Data Statements

*By THOMAS H. SIMMONDS, JR. and JIM BORDEN*

*When you need to add a machine-language routine to a Basic program, reach for this utility. It automatically makes Data statements out of hex code.*

This article presents two versions of a utility that enables you to incorporate machine-language routines into your Basic programs. Listing 1, for the C-64, and Listing 2, for the C-128, Peek anywhere in random access memory and transcribe the hexadecimal machine language there into lines of Basic Data statements. The transcriber then deletes itself, leaving the Basic Data lines for you to add to or merge with an existing program. This is an ideal way to add custom characters or sprites to a program after they've been generated by an editor program.

### *The C-64 Version*

Type in Listing 1. Because the transcriber uses Pokes to the keyboard buffer and the dynamic keyboard (see the "Basically Speaking" column, *RUN*, June 1986, p. 88), the line numbers and the contents of the lines must be typed in exactly as they appear here. Also, since the transcriber erases itself after it's finished its job, be sure to save it on tape or disk before you run it.

Use a "filename",8,1 format to load RAM with the machine language you wish to transcribe into Data statements. Now load Listing 1, run it, and type in the information requested. Be sure the starting Basic line number is greater than the highest line number in the transcriber. You may want to choose line numbers and a line-number increment that will be compatible with the program to which you plan to add the Data statements.

Then enter the beginning and ending RAM locations to be transcribed. The transcriber will cycle through, writing Data statements and then line numbers to the screen until it has processed the last memory location you designated. When it's done, save the statements to tape or disk, clear the computer and load the program you are adding the statements to. Then, in Direct mode, type the following as one line and press the return key:

```
L=256*PEEK(46)+PEEK(45)-2:LH=INT(L/256):LL=L-256*LH:POKE43,LL:POKE44,LH:CLR
```

Next, load the Data statements and, in Direct mode again, enter the following line and press return:

```
POKE43,1:POKE44,8
```

Now List the program. It should include the Data statements. Note that these two last steps can be used to merge any Basic programs.

### *The C-128 Version*

Listing 2 is the transcriber for the Commodore 128. It takes advantage of some Basic 7.0 keywords, but also allows data to be read from any bank of memory. In the 128 version, the F1 key replaces the dynamic keyboard.

Lines 1 through 7 of Listing 2 are about the same as those in Listing 1. Line 9 saves the present definition of the F1 key, so it can be restored after the transcriber has completed its work. Line 10 defines F1 to Home plus 25 returns. By using the F1 key rather than the dynamic keyboard, you can print 20 lines on the screen at a time. Line 10 also sets Z to point to line 11, and sets the memory bank to the one you specify.

Line 11 begins the actual printing sequence by setting variable J (the line counter) to 1 and clearing the screen. Line 12 checks to see if the 20th line has been printed. If it has, then J equals 21 and the program continues at line 13.

Line 13 prints the Data statements to the screen, and the dynamic keyboard technique enters those statements into the computer. Execution then depends on the value of Z. If Z is 11, execution reverts to line 11 to create another 20 lines of Data statements. When the last of the data has been processed, the value of Z becomes 18, and execution passes to line 18, which erases the transcriber.

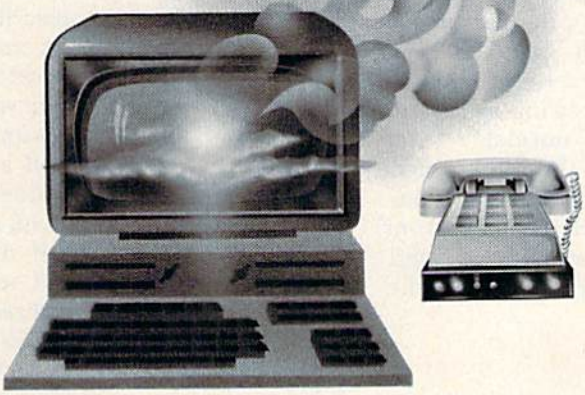
Line 13 also contains three Pokes. The first clears any non-function keys from the buffer. The second is the length of the K1 string—the requisite number of returns plus one for the Home character. The last is the index to the location of the string. This

**RUN** It Right

*C-64; C-128*

# If you compute after dark...

## ...switch to the magic of GEnie™ and stay on-line longer, for less!



Introducing GEnie, the General Electric Network for Information Exchange. It's part of General Electric Information Services—the largest commercial teleprocessing network.

Now the power of GEnie stands ready to bring a little magic into the life of PC owners just like you. And for potentially much less than other on-line information services.

With GEnie, you pay no hidden charges or monthly minimum fees. You pay only for the actual time you're on-line and the $18.00 registration fee. Nothing more.

**Compare & Save**

| | Services | | | | | | Pricing | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | SIGs/User Groups | Electronic Mail | CB Simulator | Computing News | Games | 2400 baud access | Registration fee | Monthly minimum | Non-prime time rates | |
| | | | | | | | | | 300 baud | 1200 baud |
| **GEnie*** | **X** | **X** | **X** | **X** | **X** | **X** | **$18.00** | **none** | **$5.00** | **$5.00** |
| CompuServe | X | X | X | X | X | X | $39.95 | none | $6.25 | $12.75 |
| The Source | X | X | no | X | X | X | $49.95 | $10.00 | $8.40 | $10.80 |

*Rates and Services shown in effect 12/85. Non-prime time rate applies Mon–Fri, 6pm–8am local time, all day Sat., Sun., and nat'l. holidays. Subject to service availability. Additional surcharge applies for 2400 baud service.

### *Save up to 60%*

Check out the chart above and compare it for yourself. You'll find GEnie can deliver all of your favorite services for an incomparable price at incomparable savings!

### *Put the power of GEnie at your command*

- Discuss the latest in computer products and accessories or download public domain software with GEnie's ***RoundTable™ Special Interest Groups.***
- Meet new people, share ideas with friends—old and new—with ***LiveWire™***, GEnie's CB simulator that has everybody talking!
- Get your message across and back again with ***GE Mail™***, GEnie's electronic mail service.
- Organize a local, regional or national get-together in one of GEnie's 40 "conference rooms" with GEnie's ***Business Band Real-Time Conferencing.***
- Go one-on-one with classic computer games, match your wits against others with multi-player games, or download for future play in GEnie's ***Game Room.***
- Stay in touch with what's new on the microcomputer scene, courtesy of GEnie's news service, ***News and Commentary.***

GEnie can take you to new highs in speed and keep you there. Because our non-prime time rate for 300 OR 1200 baud is only $5.00 an hour. And that means you save 20 to 60%. Or if you prefer, 2400 baud service is now available.

With services and prices like these—talk, read, learn, or play to your heart's content. Because now you can keep your eyes on the screen, not on the clock.

With your personal computer, modem, communications software, and telephone, you already have everything you need to make GEnie come to life. So why not Sign-Up today. Let GEnie bring a little magic into your life!

### *Sign Up From Your Keyboard Today 4 Easy Steps:*

1. Have ready your VISA, MasterCard or checking account number to set up your personal GEnie account.
2. Set your modem for half duplex (local echo)—300 or 1200 baud.
3. Dial **1-800-638-8369.** When connected, enter HHH
4. At the U# = prompt, enter **XJM11945,GENIE** then RETURN.

No Modem Yet? Need more information or assistance?
We can help! Call **1-800-638-9636, ext. 21.**

***Get on-line with GEnie. And stay longer, for less.***

**INFORMATION SERVICES**

General Electric Information Services Company, U.S.A.

value equals the actual location minus 4106 and is always zero for the F1 key's string.

Line 14 starts building the Data statements by printing a line number (FL), the word DATA and a space. Then line 15 initiates the loop that prints eight items of data per line. You can change the 7 to 15 if you have an 80-column screen. Line 15 ends by increasing the memory-location variable (FM) to the RAM location the transcriber will Peek next.

Line 16 actually prints the data (which was formatted as a string to drop the leading space), including commas to separate the data items. It then checks to see if the next memory location is greater than the last location to transcribe. If it is, line 16 sets the loop counter to its current value plus 100. This flag signals that the last data item has been transcribed. If you must exit a For-Next loop, this is one way to do it.

Line 17 loops back until the number of bytes in the For statement appears on the screen. Then it moves the cursor right and prints a space to eliminate the last comma. Line 17 also increases the counter ( J), adds the proper interval to the line number (FL) and checks the "finished" flag. Finally, if all the data has been processed (I > 100), Z is set to 18 to erase the transcriber, as I mentioned earlier.

The ELSE in line 17 is a Basic 7.0 keyword that provides for an alternative when an If-Then statement is false. Here, if I is not greater than 100, the program loops back to line 12 (without changing the value of Z).

Line 18 executes another 7.0 keyword, DELETE, which is used to erase one or more lines. In this case, all the program lines are deleted, so line 18 produces only a blank line and the word READY. That's the reason for the two extra Print statements. Finally, the 7.0 keyword KEY in line 18 assigns the original string to F1 and returns the bank to "normal."

Line 19 executes the returns necessary for the Delete and Key statements and pulls a SHFT CLR from the dynamic keyboard (POKE 208,1 and POKE 842,147) to clear the screen.

To add the Data statements to the main program, first load the main program, then, in Direct mode, type:

```
GRAPHIC CLR:T = 65278 – FRE(0):POKE46,
T/256:POKE45,T – PEEK(46)*256
```

and press the return key. Next, load the Data statements and then type, again in Direct mode:

```
POKE45,1:POKE46,28
```

and press return. Now you can list the combined program. As with the C-64 version, you can use this procedure to combine any Basic programs.

### *Variable Storage*

A note on how variables are stored is in order here. You'll notice that the C-64 version of the transcriber has to Poke all the variables and later Peek them, but the 128 version does not. The 64 stores numeric variables at the end of a Basic program, where they may be overwritten if a line is changed. That's why Basic does a CLR in the 64 any time you revise a line.

With the transcriber, if the variables weren't Poked into memory, they'd all contain a value of zero after the program read in the first line of data. The 128 uses a separate bank of RAM to store its variables, and Basic doesn't affect it when changing, adding or deleting lines.

Users of the C-128 should keep this in mind. It's usually possible to change a line and then go right on executing the program. If, for example, you get a syntax error in line 500, you can list the line and correct the error, then continue the program by typing GOTO500 and pressing the return key. This is a way to avoid long setup delays while debugging programs, a trick you'll appreciate more and more as your programming skill improves.

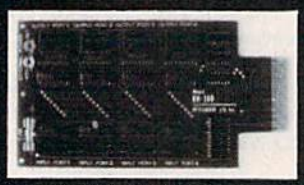
Using this transcriber utility to make Data statements is an easy way to build a library of subroutines, each starting at a different line number, that can later be incorporated into a main program. By keeping a list of the starting line numbers, you can then include GOSUBs to any of them when you're writing a main program. After you append the subroutine and renumber, Basic 7.0 will handle all the GOTO and GOSUB addresses for you. R

*Address C-64 questions to Thomas H. Simmonds, Jr., 127 Chestnut St., North Andover, MA 01845; address C-128 questions to Jim Borden, 641 Adams Road, Carlisle, PA 17013.*


Circle 260 on Reader Service card.

**DISCOVER THE HIDDEN POWER!**

- Control lights, appliances, heating & cooling systems, relays, motors and virtually any electrical device.
- Connect to temperature, light, sound, moisture, fluid level, pressure and vibration sensors - plus many more.
- Use as an advanced security system.
- Perform automated testing and experimentation.
- Use as a sophisticated laboratory data acquisition system.
- Use for educational purposes.
- Access each port via one statement in BASIC. No interface could be easier to use.
- 4 8-bit output ports (32 separate output lines).
- 4 8-bit input ports (32 separate input lines).



**Expands to meet your needs:**

- 1 channel A-D plug-in conversion module: $25.
- 8 channel A-D plug-in conversion module: $50.
- BH100 User Manual includes instructions, sample programs and diagrams of typical hookups.

**ONLY $129!**

Intelligent I/O, Inc. P.O. Box 70
Potsdam, NY 13676 (315) 265-6350

Please add $2 for postage. Specify C-64, VIC-20 or Apple 2+/2e. Bulk rates available.

**LOTTO CIPHER.**

GET THE BEST ODDS ON ANY LOTTERY
SIX NUMBER - PICK FOUR - DAILY GAME

- PRODUCES FOUR COMBINATIONS OF NUMBERS TO CHOOSE FROM.
- ANY AMOUNT OF BALLS AND NUMBERS CAN BE PROGRAMMED.
- PRINTS OUT PAST LOTTO NUMBERS DRAWN, PAST COMPUTER PICKS, AND NUMBER DRAW FREQUENCY LIST.
- COMPLETE NUMBER DATA BASE.

$29.95 C-64 DISK

**Window Magic**

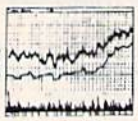
SUPER HI-RESOLUTION DRAWING IN MULTI OR MONO COLOR

• POLYGON SHAPES • EXPAND, SHRINK AND ROTATE, THEN STAMP ANYWHERE • ZOOM - EXPANDS A WINDOW TO DOUBLE SIZE • MIRROR, FLIP, AND SCROLLING WINDOWS • COPY • CLONE COLOR ATTRIBUTES • ZOOM PLOT - DRAW ON AN EXPANDED WINDOW AND YOUR DRAWING AT THE SAME TIME • SAVE AND LOAD YOUR WINDOWS ON DISK • PRINTS ON STANDARD DOT MATRICS PRINTER • FILL • LINES • DRAW • TYPE LETTERS AND GRAPHICS • COLOR SQUARES

$24.95 C-64 DISK

**STOCK BROKER.**

PROFITS GUARANTEED OR YOUR MONEY BACK



BUYING GOOD QUALITY, VOLATILE ISSUES AND USING THE TRADING SYSTEM WILL HAVE YOU FULLY INVESTED AT THE LOWEST PRICES AND CONVERTING TO CASH AS THE STOCK NEARS ITS PEAK.

- TECHNICAL TRADING THAT WORKS.
- BAR GRAPH PRINT-OUTS.
- RECORD UP TO 144 STOCKS ON A DISK.

$39.95 C-64 DISK

**ABANDON SHIP.**

S.O.S.

HI-RES ARCADE STYLE GAME THAT REQUIRES STRATEGY AND JOYSTICK SKILLS. THERE ARE 52 ROOMS IN THE HMS BLACK. THE BRIDGE, ENGINE ROOM, ARMORY, AND SUPPLY ROOM ARE THE MOST IMPORTANT TO PROTECT.
GIVE MY REGARDS TO DAVEY JONES.

$21.50 C-64 DISK

ACORN OF INDIANA, INC.
2721 OHIO STREET
MICHIGAN CITY, IN 46360

**219-879-2284**

SHIPPING AND HANDLING, ADD $1.50 - C.O.D.'S ACCEPTED
VISA AND MASTER CARD ORDERS ADD 4%
INDIANA RESIDENTS ADD 5% SALES TAX

# WHITE HOUSE COMPUTER

"Where Prices are Born, Not Raised."

P.O. Box 4025 Williamsport, PA 17701

## COMPUTERS

| | |
|---|---|
| 64C | CALL |
| C-128 | $275 |

**ORDER TOLL FREE 1-800-351-3442**

VISA 4%, MASTER CARD 4%, AMERICAN EXPRESS 5%

**CUSTOMER SERVICE AND PA RESIDENTS CALL 1-717-322-7700**

Hours:

Monday-Friday 9 a.m.-8 p.m.
Saturday 9-12 p.m.

## MONITORS

**AMDEK**

| | |
|---|---|
| 300G | $117 |
| 300A | 127 |
| 310A | 145 |
| Color 600 | 395 |
| Color 700 | 494 |
| Color 710 | 568 |

**ATARI**

| | |
|---|---|
| SM124 | $169 |
| SC1224 | 325 |

**NEC**

| | |
|---|---|
| 1201 | $139 |
| 1205 | 89 |
| 1260 | 79 |

**TAXAN**

| | |
|---|---|
| 220 Color/Green/14" | $179 |

**THOMSON**

| | |
|---|---|
| CM365 RGB/Color/Green With Cables | $269 |

**TEKNIKA**

| | |
|---|---|
| MJ-10 | $159 |
| MJ-22 | 254 |

**SAKATA**

| | |
|---|---|
| SC-100 | $140 |

**ZENITH**

| | |
|---|---|
| ZVM 1220 | $95 |
| ZVM 1230 | 95 |

**BLUE CHIP**

| | |
|---|---|
| Green | $89.00 |
| Amber | 93.00 |
| Color/RGB | 279.00 |

## PRINTERS

**CITIZEN**

| | |
|---|---|
| MSP-10 | $267 |
| MSP-15 | 367 |
| MSP-20 | 354 |
| MSP-25 | 527 |
| 120D | 194 |

**STAR MICRONICS**

| | |
|---|---|
| NX-10 | CALL |
| Gemini II | CALL |
| SG-15 | $366 |
| SD-15 | 440 |
| SR-10 | 469 |
| SR-15 | 580 |
| SB-10 | 588 |
| SG-10C | 230 |
| Powertype | 295 |

**LEGEND**

| | |
|---|---|
| 808 | $154 |
| 1080 | 205 |
| 1380 | 259 |
| 1385 | 295 |

**OKIDATA**

| | |
|---|---|
| Okimate 10 | $171 |
| Okimate 20 | 211 |
| 182 | 214 |
| 192 | 348 |
| U-93 | 389 |

**PANASONIC**

| | |
|---|---|
| 1080 | $209 |
| 1091 | 231 |
| 1592 | 459 |
| 1595 | CALL |
| 3131 | 259 |
| 3151 | 408 |

**SEIKOSHA**

| | |
|---|---|
| SP 1000 | $188 100CPS/NLQ |
| MP1300AI | 525 300 CPS/NLQ |

**EPSON**

Call for current pricing on all Epson models

**PRINTER RIBBONS AND DUST COVERS AVAILABLE**

## INTERFACES

| | |
|---|---|
| Super G | $52 |
| PPI | 39 |
| MW350 4K | 48 |
| MN350 10K | 64 |
| Xetec Super 8K | 64 |
| Micro Stuffer | 69 |

## MODEMS

| | |
|---|---|
| Mitey Mo | $56 |
| C-1670 | 159 |
| Avatex 1200 | 95 |
| Avetex 1200 HC 100% Hayes | 143 |
| Team Modem 100% Hayes | 199 |
| Messenger | 41 |
| Compuserve | 21 |

## DISKETTES

**3½ FUJI**

| | |
|---|---|
| SS/DD | $17 |
| DS/DD | 24 |

**NASHUA**

| | |
|---|---|
| SS/DD | $21 |
| DS/DD | 26 |

**5¼ FUJI**

| | |
|---|---|
| SS/DD | $11 |
| DS/DD | 14 |

**ELEPHANT**

| | |
|---|---|
| SS/DD | $12 |
| DS/DD | 14 |
| Disk Notchers | $4 |

**Disk Banks**

| | |
|---|---|
| Allsop | CALL |
| Innovative Concepts | CALL |

## SOFTWARE

**BATTERIES INCLUDED**

| | |
|---|---|
| Consultant | $37 |
| Homepark | 29 |
| Paperclip | 36 |
| Paperclip/Spell | 49 |
| Spellpack | 30 |
| ISGUR Portfolio | 151 |

**MICROPROSE**

| | |
|---|---|
| Conflict in Vietnam | $24 |
| F-15 Strike Eagle | 21 |
| Kennedy Approach | 21 |
| Silent Service | 21 |

**SPRINGBOARD**

| | |
|---|---|
| Clip Art #1 | $19 |
| Clip Art #2 | 25 |
| Newsroom | 31 |

**SSI**

| | |
|---|---|
| Battle of Antietam | $31 |
| Computer Quaterback | 25 |
| Fortress | 10 |
| Nam | 25 |
| 84 Quarterback Data | 14 |

**SUBLOGIC**

| | |
|---|---|
| Flight Simulator | $32 |
| Jet | 27 |
| Night Mission Pinball | 21 |
| Scenery Disks | 14 |

**ELECTRONIC ARTS**

| | |
|---|---|
| Financial Cookbook | $26 |
| Music Construct. Set | 16 |
| One-on-One | 22 |
| 7 Cities of Golf | 22 |
| Ultima III | 34 |
| Ultima IV | 40 |

**EPYX**

| | |
|---|---|
| Eidolon | $25 |
| Fast Load | 25 |
| Rescue at Fractalus | 26 |
| Scrabble | 26 |
| Summer Games | 26 |
| Temple of Apshai | 20 |
| Winter Games | 26 |

**FIREBIRD**

| | |
|---|---|
| Elite | $19 |
| Advanced Music Sys | 47 |
| Consise Music Sys | 26 |

**BRODERBUND**

| | |
|---|---|
| Bank Street Writer | $31 |
| Bank Street Speller | 31 |
| Blue Max 2001 | 20 |
| Karateka | 19 |
| Lode Runner | 23 |
| Music Shop | 29 |
| Print Shop | 26 |
| Print Shop Companion | 22 |
| Libraries | 16 |

**TIMEWORKS**

| | |
|---|---|
| Data Manager 128 | $43 |
| Partner 128 | 37 |
| Swiftcalc 128 | 43 |
| Sylvia Porter 128 | 43 |
| Word Writer 128 | 43 |
| Account Payable 64 | 37 |
| Accounts Receivable 64 | 37 |
| General Ledger 64 | 37 |
| Inventory Management 64 | 37 |
| Partner 64 | 31 |
| Payroll Management 64 | 37 |
| Sideways 64 | 21 |
| Word Writer/Spell 64 | 31 |

**VALUEWARE (TIMEWORKS)**

HOME MANAGER (3 in 1)
- *Word Processer • Data Magic Calculator* ..... $7.00

KITCHEN MANAGER (2 in 1)
- *Electronic Cookbook • Diet Doctor* ..... $7.00

HOME BANKER (5 in 1)
- *Checkbook Organizer*
- *Loan Amortizer*
- *Depreciation Calculator*
- *Savings Organizer*
- *Mortgage Manager* ..... $7.00

THE ARTIST (3 in 1)
- *Computer Artist • Frame It • Sprite Builder* ..... $7.00

## PAPER

**WHITE 20 LB LAZOR EDGE**

| | |
|---|---|
| 2500 Sheets | $26 |
| 1000 Sheets | 16 |
| 500 Sheets | 11 |

**ASSORTED PASTELS LAZOR EDGE**

| | |
|---|---|
| 2500 Sheets | $44 |
| 1000 Sheets | 26 |
| 500 Sheets | 16 |
| 1000 Mailing Labels | 9 |

## DISK DRIVES

| | |
|---|---|
| 1541C | CALL |
| C1571 | $239 |
| Enhancer 2000 | 179 |
| Indus GT | 189 |
| Blue Chip | 155 |

Ordering and Terms
Place orders Mon-Fri 9am-8pm, Sat. 9-12 pm. Customer service calls taken Mon.-Fri. 10am-4pm. No deposit on C.O.D. orders. Free freight on all prepaid cash orders over $300 in the continental U.S.A. APO andFPO orders add $5 per hundred. Priority mail add $10 per hundred. All foreign orders add 8% for shipping. UPS shipping add $4 per hundred Eas Coast. $5 per hundred West Coast. PA residents add 6% sales tax. Free shipping for PA residents. Orders by company and personal checks held 3 weeks. Defective products require prior return authorization. Defective products will be replaced or repaired according to warranty. **No used or reconditioned products sold.** Prices and availability are subject to change without notice. No cash refunds.

## Listing 1. *The C-64 version of the transcriber routine.*

```
1 IFFRE(1)>5ØØØØTHENPRINT"FOR C-64 ONLY!!":
  END:REM MOD BY R L ADAMS 3/84     :REM*113
2 PRINT"{SHFT CLR}{2 CRSR DNs} MEMORY TO DA
  TA ST."                           :REM*58
3 PRINT"{2 CRSR DNs} ENTER FIRST DATA LINE
  NUMBER":INPUTFL                   :REM*23
4 IFFL<5ØTHENPRINT"MUST BE >5Ø":GOTO3
                                    :REM*23Ø
5 PRINT" ENTER LINE NUMBER INTERVAL":INPUTL
  I                                 :REM*15
6 PRINT" ENTER FIRST LOCATION IN MEMORY TO
  BE{4 SPACEs}PUT IN DATA ST.":INPUTFM
                                    :REM*242
7 PRINT" ENTER LAST LOCATION IN MEMORY TO B
  E PUT IN DATA ST.":INPUTLM        :REM*161
8 IFLM=<FM THEN7                    :REM*76
9 J=1:PRINT"{SHFT CLR}";            :REM*97
1Ø POKE1ØØØ,J:T=INT(LI/256):POKE1ØØ1,T:POKE
   1ØØ2,LI-T*256:T=INT(FL/256)      :REM*214
11 POKE1ØØ3,T                       :REM*51
12 POKE1ØØ4,FL-T*256:T=INT(FM/256):POKE1ØØ5
   ,T:POKE1ØØ6,FM-T*256:T=INT(LM/256)
                                    :REM*96
13 POKE1ØØ7,T:POKE1ØØ8,LM-T*256     :REM*113
14 IFJ/4<>INT(J/4)GOTO16            :REM*234
15 PRINT"{CTRL 7}GOTO24":POKE198,1Ø:POKE631
   ,19:FORK=1TO9:POKE631+K,13:NEXT:END
                                    :REM*41
16 J=PEEK(1ØØØ):LI=PEEK(1ØØ1)*256+PEEK(1ØØ2
   ):FL=PEEK(1ØØ3)*256+PEEK(1ØØ4)   :REM*22Ø
17 FM=PEEK(1ØØ5)*256+PEEK(1ØØ6):LM=PEEK(1ØØ
   7)*256+PEEK(1ØØ8)                :REM*161
18 NU=(J-1)*LI+FL:PRINTNU"DATA";    :REM*178
19 FORI=ØTO7:M=FM+(J-1)*8+I:HX=PEEK(M):HX$=
   STR$(HX):HX$=RIGHT$(HX$,LEN(HX$)-1)
                                    :REM*75
2Ø IFI=7THENPRINTHX$:GOTO22         :REM*24
21 PRINTHX$",";                     :REM*253
22 IFM=(LM)THENPRINT"{CRSR LF} ":GOTO25
                                    :REM*21Ø
23 NEXTI:J=J+1:GOTO1Ø               :REM*133
24 PRINT"{SHFT CLR}{COMD 7}";:GOTO16 :REM*8
25 PRINT"{COMD 7}GOTO26":POKE198,1Ø:POKE631
   ,19:FORK=1TO9:POKE631+K,13:NEXT:END
                                    :REM*243
26 J=Ø:PRINT"{SHFT CLR}";           :REM*98
27 FORK=JTOJ+7:PRINTK:NEXT:POKE1ØØØ,K
                                    :REM*95
28 IFK<32THENPRINT"GOTO31"          :REM*21Ø
29 POKE198,1Ø:POKE631,19:FORK=1TO9:POKE631+
   K,13:NEXT:PRINT"{COMD 7}":END    :REM*37
3Ø J=PEEK(1ØØØ):GOTO27              :REM*38
31 PRINT"{CTRL 7}{SHFT CLR}";:GOTO3Ø
                                    :REM*189
```

## Listing 2. *The C-128 version of the transcriber routine.*

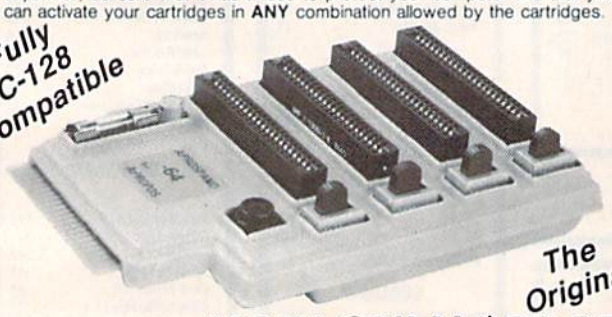
```
1 IFFRE(1)<5ØØØØTHENPRINT"FOR C-128 ONLY!!"
  :END:REM C-128 VERSION BY JIM BORDEN
                                    :REM*41
2 PRINT"{SHFT CLR}{2 CRSR DNs}C-128 MEMORY
  TO DATA STATEMENTS"               :REM*252
3 INPUT"{2 CRSR DNs}ENTER FIRST DATA LINE N
  UMBER";FL                         :REM*87
4 IFFL<2ØTHENPRINT"LINE MUST BE >19":GOTO3
                                    :REM*148
5 INPUT"{CRSR DN}LINE NUMBER INTERVAL";LI
                                    :REM*25
6 INPUT"{CRSR DN}FIRST LOCATION FROM MEMORY
  ";FM                              :REM*126
7 INPUT"{CRSR DN}LAST LOCATION FROM MEMORY{
  2 SPACEs}";LM:IFLM<=FMGOTO7       :REM*63
8 INPUT"{CRSR DN}BANK NUMBER WHERE DATA IS
  STORED{3 SPACEs}15{4 CRSR LFs}";BN:IFBN<Ø
  ORBN>15GOTO8                      :REM*126
9 K1=PEEK(4Ø96):K1$="":FORX=1TOK1:K1$=K1$+C
  HR$(PEEK(41Ø5+X)):NEXT            :REM*13
1Ø A$=CHR$(19):FORX=1TO25:A$=A$+CHR$(13):NE
   XT:KEY1,A$:Z=11:BANK BN          :REM*66
11 J=1:PRINT"{SHFT CLR}";           :REM*99
12 IFJ<21GOTO14                     :REM*184
13 PRINT"GOTO"Z:POKE2Ø8,Ø:POKE2Ø9,J+1:POKE2
   1Ø,Ø:END                         :REM*29
14 PRINTFL"DATA ";                  :REM*124
15 FORI=ØTO7:HX=PEEK(FM):HX$=STR$(HX):HX$=R
   IGHT$(HX$,LEN(HX$)-1):FM=FM+1    :REM*123
16 PRINTHX$",";:IFFM>LM THENI=I+1ØØ:REM*18Ø
17 NEXTI:PRINT"{CRSR LF} ":J=J+1:FL=FL+LI:I
   FI>1ØØTHENZ=18:GOTO13:ELSE GOTO12
                                    :REM*237
18 PRINT"{SHFT CLR}DELETE-19":PRINT:PRINT:P
   RINT"KEY1,K1$:BANK 15            :REM*13Ø
19 POKE2Ø8,1:POKE2Ø9,3:POKE21Ø,Ø:POKE842,14
   7:END                            :REM*159
```

end R


Circle 210 on Reader Service card.

**APROSPAND-64™** Gives your Commodore 64 or 128 full expandability! This superbly designed expansion module plugs into the expansion port & gives you 4 switchable (singly or in any combination) expansion connectors - plus fuse protection - plus a reset button! Before you buy an expander, be sure that it has a fuse to protect your computer and that you can activate your cartridges in **ANY** combination allowed by the cartridges.

Fully C-128 Compatible



The Original

**NOW ONLY $29.95**

**Commodore Interfaces and Cables**

Cardprint G-WIZ Printer Interface #1108.....**$46.95**
Cardprint B/PS (without Graphics) #1105.....**$35.95**
Amiga Printer Cable (6 ft) #3040-6MF.....**$17.95**
Amiga Printer Cable (10 ft) #3040-10MF.....**$21.95**
Commodore 6 Pin Serial Cable (5 ft) #3006-5MM...**$ 6.95**
Commodore 6 Pin Serial Cable (8 ft) #3006-8MM...**$ 8.95**
Add Shipping Per Item: $3.00 Cont. U.S. $6.00 CAN, PR, HI, AK, APO, UPS Blue

PRINTERS

APROTEK Daisy 1120, 20 CPS Daisy Wheel.....**$279.95**
Elite 5CD, 10 CPS Daisy, Commodore.....**$174.95**

**SEIKOSHA SP-1000VC ..... $169.95!!**
Add Shipping Per Item: $10.00 Cont. U.S. $22.00 CAN, PR, HI, AK, APO, UPS Blue

TECHNICAL INFORMATION (805) 987-2454 CALIF.
CALL TOLL FREE TO ORDER: (800) 962-5800 US

APROTEK Dept RN
1071-A Avenida Acaso, Camarillo, CA 93010
CA Res. Add 6% Tax. Listed are cash prices. VS & MC Add 3%

# Program Enhancement

In response to reader requests, Joe Kaczynski has submitted a print routine for incorporation into his Songfest program (April 1986, p. 30). This will give you a hard copy of your notes as an aid in the editing process. The routine works with menu options I (input) and E (error correction). Change existing lines as follows:

```
115 IF A$ = "I" THEN GOSUB 191: GOTO 195
120 IF A$ = "A" THEN Z = 2: I = IM: D = IM: PRINT "{SHFT CLR}":
    GOSUB 191: GOTO 240
135 IF A$ = "E" THEN Z = 3: PRINT "{SHFT CLR}": GOSUB 191:
    GOTO 645
270 IF Z = 3 THEN Z = 0: IF HC$ = "Y" THEN PRINT#4: CLOSE4:
    GOTO 20
370 NEXT: Z = 0: IF HC$ = "Y" THEN PRINT#4: CLOSE4: GOTO 20
```

The following lines are new:

```
191 INPUT {3 CRSR DNs} {COMD 6} "WANT A HARD COPY OF
    YOUR NOTES Y/N";HC$: IF HC$ < > "Y" THEN RETURN
192 IF A$ = "A" OR A$ = "E" AND HC$ = "Y" THEN OPEN 4,4,0:
    RETURN
193 PRINT "{2 CRSR DNs} {CTRL 3} BE SURE PRINTER IS
    TURNED ON {CTRL 7} {3 CRSR DNs}": INPUT "SONG TITLE
    {CTRL 2}";ST$: OPEN 4,4,0
194 PRINT#4,ST$: RETURN
261 IF HC$ = "Y" THEN PRINT#4, "VOICE # "K " NOTE INPUT
    DATA"
344 IF DR% = 1 AND HC$ = "Y" THEN PRINT#4,"{2 SPACES}
    MEAS. "B "TO "C
361 IF HC$ = "Y" THEN PRINT#4, "{2 SPACES} MEAS. "B "TO "C
701 IF HC$ = "Y" THEN PRINT#4, "ERROR CORRECTION MADE
    TO VOICE ";VB%
702 IF HC$ = "Y" THEN PRINT#4,NP$; ",";NO; ",";ND;
711 IF HC$ = "Y" AND A$ = "A" THEN PRINT#4, "CONTINUING"
712 IF HC$ = "Y" THEN PRINT#4,NP$; ",";NO; ",";ND;
716 IF NP$ = "0" AND HC$ = "Y" THEN PRINT#4:PRINT#4
```

# Q-Link Happenings

QuantumLink has recently added several new services for its subscribers:

—CIN (Commodore Information Network) News alerts users to current and upcoming events of interest to Commodore owners.
—New Product Information offers news about Commodore's latest hardware and software developments.
—Magazine Rack lets users browse through excerpts of magazine articles.
—The Funny Bone, a new service added to the Just for Fun department, promises humorous entertainment.

Berkeley Softworks, developer of the GEOS desktop operating system, now provides updated GEOS information and support on Q-Link. Activities in the GEOS Special Interest Group include message boards, a software library and a monthly conference.

Q-Link's Mall has also been expanded and now offers Commodore products to Q-Link members at special discount prices. Members can also save money by participating in Q-Link's live auctions held several times each month. R

# Programming Briefs

Here's a list of often-used Pokes, calls, commands and numbers for your C-64, conveniently grouped to save you time.

### Poke information

| | |
|---|---|
| POKE646,color# | Color of text character |
| POKE63280,color# | Color of border |
| POKE53281,color# | Color of background |
| POKE650,128 | All keys repeat |
| POKE650,0 | Disables the repeat |
| | |
| POKE53272,21 | Uppercase/graphics |
| POKE53272,23 | Lowercase/uppercase |
| POKE649,0 | Disables keyboard |
| POKE649,10 | Enables keyboard |
| POKE649,10:POKE808,237 | Restores keyboard |
| | |
| POKE819,245:POKE818,32 | Disables save |
| POKE818,245:POKE818,237 | Enables save |
| POKE775,200 | Disables list |
| POKE775,167 | Enables list |
| POKE53265,31 | Lowers topmost screen line |
| | |
| POKE198,0 | Clears keyboard buffer |
| POKE793,203 | Disables restore |
| POKE808,237 | Enables stop, restore, list |
| POKE808,225 | Disables stop, restore, list |
| POKE788,52:POKE808,239 | Disables stop |
| POKE788,49:POKE808,237 | Enables stop |

### System calls

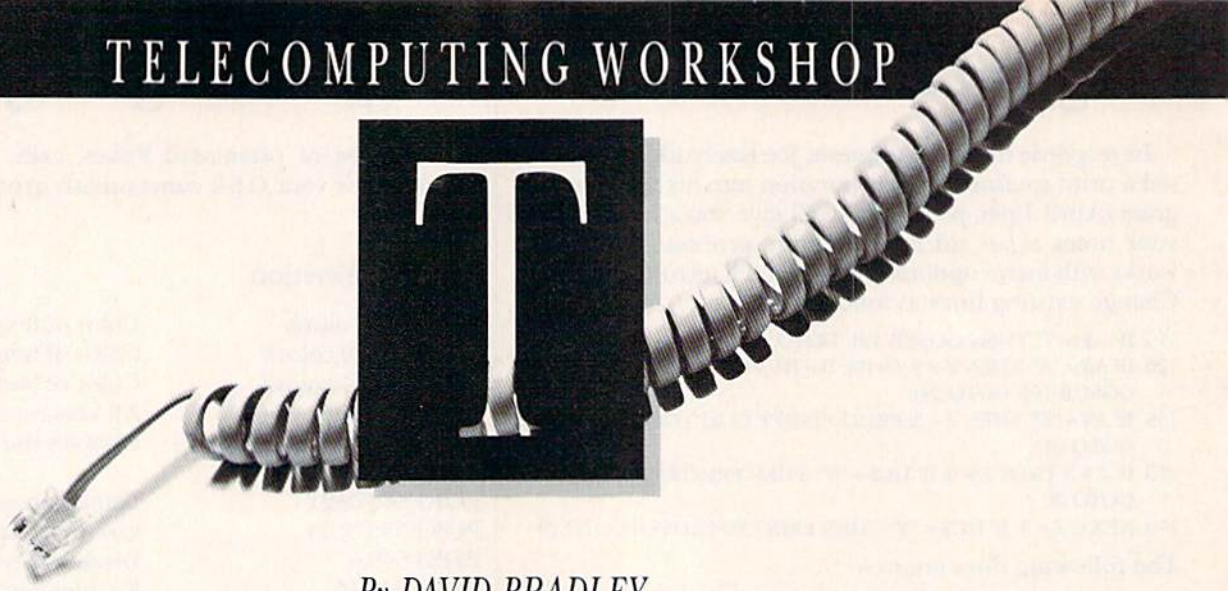
| | |
|---|---|
| **SYS 58692** | Clear/home |
| **SYS 58726** | Home position |
| **SYS 59903** | Clears entire line of text |
| **SYS 59062** | Advances cursor |
| **SYS 59626** | Scrolls up a line |
| **SYS 59137** | Back to previous line |
| **SYS 64738** | Cold start |
| **SYS 65511** | Closes all open files |

### Color Poke chart

| | |
|---|---|
| 0 | Black |
| 1 | White |
| 2 | Red |
| 3 | Cyan |
| 4 | Purple |
| 5 | Green |
| 6 | Blue |
| 7 | Yellow |
| 8 | Orange |
| 9 | Brown |
| 10 | Lt. Red |
| 11 | Gray 1 |
| 12 | Gray 2 |
| 13 | Lt. Green |
| 14 | Lt. Blue |
| 15 | Gray 3 |

*(Compiled by Mary D. Brigito, Old Forge, NY.)*

# TELECOMPUTING WORKSHOP



By DAVID BRADLEY

*Telecomputing Workshop is a monthly column dedicated to the needs of* RUN *readers who are using, or intend to use, a Commodore computer for telecommunications. We invite you to submit your questions or comments to:*

*David Bradley*
*Telecomputing Workshop*
*c/o* RUN *magazine*
*80 Pine St.*
*Peterborough, NH 03458*

I'll begin this month's Telecomputing Workshop with some updated answers to questions in the June column. Edward Basner asked in that issue if the beep generated by the call-waiting service on his phone would interfere with receiving data over his modem. We told him yes, it probably would cause some garbled characters and might even disconnect him from the system. We recommended that he either discontinue the call-waiting or have another phone line installed.

Since then we've received letters from writers in ten states in response to our answer. All the letters tell of the same quick and easy way to temporarily disable call-waiting. Here's how to do it.

*Before* you make your call, dial 1170. (On a touch-tone phone, *70 will work as well.) Once you've done that, you'll hear the dial tone again. Now you've disabled call-waiting. When you've finished your call and hang up, call-waiting will return automatically.

If your terminal program will support it, you can easily add this number to your phone list and have your auto-dialer disable the call-waiting every time it dials. If possible, you should put a pause between the 1170 and the BBS number. Cindy Jones of Bakersfield, California, says two seconds does the trick for her.

Since the letters with this solution came from many localities across the United States, I assume this service is widely available. However, it may not be offered everywhere, so check with your local telephone company. As far as I know, it's free of charge to customers who have call-waiting. The service is *not* offered in Canada.

If you're Canadian, or the service doesn't exist in your area but you do have call-forwarding, you can avoid the call-waiting beep by forwarding calls to another number during your on-line time. The other alternatives are the two mentioned in June: have call-waiting removed or get another phone line.

In the June column we also published a letter from Leonora Crain, who was having constant trouble with garbled messages. She wanted to know if the cause was more likely her modem or the phone line. We guessed the modem, but suggested that she borrow a friend's to see if that would work better, before she went out to buy a new one.

Since then, Marsha Allen, from Bay Shore, New York, has written to suggest that Leonora's trouble might be similar in origin to the problem she had when she first got a modem. After she'd tried changing modems and programs, a friend suggested that if she got a rotary phone, the trouble might go away. She did, and it did!

Now on to this month's questions.

**I recently purchased Commodore's new 1670 1200-baud modem, which comes bundled with a software package called Common Sense. Common Sense supports the Xmodem and B protocols, but doesn't support Punter, the most popular protocol used on various BBS's in my area.**

**Can you recommend any terminal packages (either commercial or public domain) that support the Punter system and can do the following:**
**—Upload and download programs.**
**—Support dual bauds.**
**—Support dual disk drives using the IEEE bus.**
**—Provide a text buffer with editing capabilities.**
**—Provide a macro-key definition mode and auto-dialing of a phone table.**

**Al Willen**
**Riverdale, NY**

At present I'm unaware of a terminal program that does everything you've listed with the Commodore 1670 modem and a C-64 computer (or a 128 in 64 mode). However, there is one that comes close—a public domain program called Thirdterm.

Thirdterm is new, but should soon be available from your local user's group, BBS, computer store or national on-line network. If you have trouble finding it, write me, and I'll try to locate a source for you.

Circle 75 on Reader Service card.

# COMPUTER REPAIR

## 800-221-7770

| | | | |
|---|---|---|---|
| Commodore Disk Drive 1541 | $60.00 | Commodore Monitor 1701 1702 | $60.00 |
| Commodore SX-64 Portable Computer | $85.00 | PET 64 VIC 20 64 2031 | $45.00 |
| Commodore Printer MPS 801 MPS 803 | $50.00 | Commodore Printer 1526 MPS 802 | $60.00 |
| MSD SD1, SD2 CBM 128 CBM 1571 | $85.00 | Commodore Computer 8032 8050 | $65.00 |

**SUBLOGIC**

| | |
|---|---|
| FLGT SIM.2 | 29.95 |
| JET | 29.95 |
| TELELEARNING | 39.95 |
| VIP | 23.95 |
| ANCHOR VOLKS MODEM | 50.95 |

**TYMAC**

| | |
|---|---|
| CONN. STR. | 48.95 |
| CONN. EPS. | 52.95 |
| CONN. APP. | 40.95 |

**WICO**

| | |
|---|---|
| BAT HANDLE | 15.95 |
| 3 WAY | 18.95 |
| BOSS | 11.95 |

**AMARAY**

| | |
|---|---|
| MEDIA MATE | 8.25 |
| PRINTER STND | 19.95 |

**ACCESS**

| | |
|---|---|
| BEACHHEAD2 | 20.95 |
| MACH 5 | 17.95 |
| RAID MOSCOW | 19.95 |
| LEADER BOARD | 22.95 |

**FOR SALE**

**CBS**

| | |
|---|---|
| MASTER SAT | 40.95 |
| FELONY | 16.95 |
| MURDR BY 12 | 14.95 |
| GOREN BRDG. | 40.95 |

**COMMODORE**

| | |
|---|---|
| 8032 DEMO | 295.00 |
| 64K EXPANSION | 139.00 |

**PROF SOFT.**

| | |
|---|---|
| FLEET SYS2 | 34.95 |
| TRIVA FEV. | 19.95 |
| WRITE SPELL | 79.95 |
| WORD PRO 3+ | 48.95 |

**T.C. ELECT.**
HWY 36 PO 1129
HARTSELLE AL.
35640
800-221-7770

**EPYX**

| | |
|---|---|
| FASTLOAD | 21.95 |
| WINTER GM | 21.95 |
| SUMMER GM2 | 21.95 |
| EIDOLON | 21.95 |
| RESCUE FRAT | 21.95 |
| VORP UT. KIT. | 18.95 |
| FOOTBALL | 21.95 |
| BASEBALL | 20.95 |
| TEMP. TRILOGY | 21.95 |
| MULTI PLAN | 33.95 |

**KOALA**

| | |
|---|---|
| MUPPT PAD | 35.95 |
| KOALA PAD | 45.95 |

**MICRO PROSE**

| | |
|---|---|
| SILENT SERVICE | 19.95 |
| KENN APPR. | 19.95 |
| F15 STRK. | 19.95 |

**HAYDEN**

| | |
|---|---|
| SAT VOC | 19.95 |
| SAT MATH | 19.95 |
| SARGON 3 | 28.95 |

CBM 2031 159.

Circle 101 on Reader Service card.

BUSINESS • SCIENCE • EDUCATION

The complete statistical package for only: **$99**

# COMM-STAT™

*A Powerful Tool for Data Analysis and Forecasting*

- Easy to use, no commands to memorize (menu-driven)
- Descriptive Statistics, t-tests (independent and dependent samples), General ANOVA/ANCOVA (up to five factors, **unlimited number of cases**, Repeated Measures, unbalanced designs, contrasts, adjusted means, and more), Correlations, Multiple Regression (up to 15 predictors, **unlimited number of cases**), Crosstabulation, Significance Tests, 10 Nonparametric Statistics, and more
- User defined (multiple) conditional selection of subsets of cases, various ways of treating missing data
- Flexible Data Editor, easy entering/editing of data, complex (conditional) transformations of variables, and more
- Can also access files created by spreadsheets and data bases
- Barcharts, Scatterplots, clear comprehensive output
- Will run on COMMODORE-64 (or 128) with 1 disk drive

*To order send check or money order for $99 (plus $5.00 shipping and handling) to:*

MasterCard **StatSoft™** VISA

2832 East 10th Street, Suite 4, Tulsa, OK 74104. (918) 583-4149

**ASK ABOUT VERSIONS FOR OTHER COMPUTERS!**

Circle 137 on Reader Service card.

# Now Shipping!

# GUARANTEED SOFTWARE

### VIZASTAR for the C128

Vizastar, the integrated spreadsheet, database and graphics program that has the Commodore 64 world raving, is now available for the C128. It boasts 80 columns, and has over 40K of free memory in the spreadsheet. Those who already own Vizastar 64 will be pleased to know that your existing files can be read by Vizastar 128. Also, you can upgrade to the 128 version. Call us for details and pricing.

"The only other comparable product would be Lotus 1-2-3 for the IBM PC; nothing in the C64 world comes even close to the features of Vizastar."
AHOY July 85

"I found Vizastar would do anything Lotus 1-2-3 could, and then some. It's my Commodore choice to become the standard against which the others will be judged."
INFO 64 Magazine, Issue #7

"Vizastar is an exceptional package that rivals the features of programs such as Lotus 1-2-3 and offers C64 owners the kind of integrated software previously only available for higher-priced systems."
RUN Magazine, June 1985

"I scrutinized, tested and experimented with Vizastar extensively, but could find no weaknesses whatsoever. It is the most comprehensive, most flexible, most powerful and easiest to use integrated software package I've worked with."
Commodore Microcomputer, Sept/Oct 1985

"I use an IBM PC at work with Lotus 123. I feel Vizastar is just as good and in someways better than 1-2-3."
Steven Roberson, NC. End User

"I have used Multiplan and Superbase; both are good pieces of software, but are inadequate when compared to Vizastar."
Jim Mathews, WA. End User

"So good, I bought a second C64 and Vizastar for my office. A wild bargain! You've saved me from having to buy IBM and Lotus."
Philip Ressler, MA. End User

### VIZAWRITE CLASSIC for C128

This is the new word processor from Vizastar's author, Kelvin Lacy and is the successor to Omniwriter, which he also wrote. All the features of Omniwriter are there, plus many significant enhancements, like auto pagination, on-line help, pull-down menus, full-function calculator and more. Up to 8 'newspaper-style' variable-width columns can help with newsletters.

Three different proportionally-spaced "near letter quality" fonts are also built-in for use with Commodore or Epson compatible printers. You can merge almost any other word processor file directly into Vizawrite, including Paper Clip and Omniwriter. Naturally, it is also compatible with Vizastar. At all times, what you see on the screen is exactly the way it will be printed out. Vizawrite can do mail-merges and has an integrated 30,000 word spelling checker that you can expand yourself.

### PROGRAM SPECIFICATIONS

Both Vizawrite and Vizastar are written in 100% machine language and run in the 128's FAST mode, making it lightning fast. They require a C128 with 80 column color or monochrome monitor. Both come with a cartridge, a diskette, and a reference manual. Vizastar also includes a 50 page tutorial book. Both work with 1541 or 1571 disk drives.

### RISK-FREE OFFER

Vizastar 128 is priced at **$119.97**. Vizawrite's price is **$89.97**. Vizastar 64 XL8 is now available for **$119.97**. We are so positive you will be satisfied with our programs that we offer a 15-day money-back guarantee. Try it Risk-Free. Call us today or send a check or money order. VISA/MC accepted.

**Offer valid only when bought through Solid State Software or participating dealers.**

Calif. residents add 6.5% Sales Tax.
Add P&H: UPS-$4; COD Canada-$7

SOLID STATE SOFTWARE

1125 E. Hillsdale Blvd., Suite 104
Foster City, CA 94404-1609
**(415) 341-5606**

• Dealer Inquiries Welcome •

Trademarks: Lotus 1-2-3/Lotus Development
Commodore 64/Commodore Electronics Ltd. Multiplan/Microsoft

**Is there any way I can use my modem while another person in my family is talking on the phone? What will happen if I'm using my modem and someone else picks up the phone?**

**Jason Meisel**
**Spring Valley, NY**

There's no way you can use your modem while another person at your house talks on the phone. If someone picks up the phone while you're on-line, you'll probably get some garbled characters and you might be cut off from the system.

This is because the second phone draws additional power that may make your signal weaker. It's like when you're talking on the phone and someone at the other end picks up an extension. The voice of the person you're talking to will probably sound fainter. The volume with which the person who picks up the phone speaks into it will also have an effect, and if that person starts to dial a number, you'll probably get disconnected.

**Two months ago I sent in a subscription card to Viewtron. A month later, not having heard anything from them, I telephoned. The answering service said Viewtron was going out of business. Yet, in the May 1986 Telecomputing Workshop, a reader asked a question regarding software required for Viewtron.**

**I just purchased a modem for my C-64 and have not yet signed up with an information service. I would like to subscribe to Viewtron. Is the firm still in business and accepting subscriptions?**

**Wayne Willmore**
**West Franklin, IL**

Viewtron is out of business, so it should be scratched off your list of potential on-line information services. You can always try Delphi, QuantumLink or CompuServe.

However, before joining such a system, I'd track down some local bulletin boards to practice on until you're comfortable with your new modem. Better to make your mistakes on local systems than when you're paying for on-line time!

**What books are available that list bulletin-board phone numbers?**

**Stephen Wilton**
**Port Hope, Ontario**
**Canada**

I've heard of some publications that try to keep track of BBS numbers all across the United States and North America, but many numbers are outdated by the time they're printed. Either some BBSs don't survive very long, or they change phone numbers and SYSOPs. However, on the local level there are many small publications that list BBS numbers. In Toronto, a free monthly newspaper called *Toronto Computes!* lists them, and I'm sure there are others all over the continent.

If you want to get a list of local BBS numbers, look in computer stores, ask at your local user-group meeting or check the bulletin sections of some BBSs. They usually have a list of other BBS numbers available for their users to read.

**Is there a public domain program available that will allow me to transfer relative files? CompuServe does not do it, but I need to transfer a Data Manager II data disk twice a month through my personal file area of CompuServe.**

**Will Corley**
**Sacramento, CA**

A couple of years ago, David Williams of Toronto wrote a program designed to take care of problems just like yours. The program, called REL-SEQ CONV.Z, takes a relative file and converts it into a sequential file. CompuServe can upload that with no trouble. Once the file has been downloaded at the other end, the same program will convert it back to a relative file.

I've used this program on the C-64 and a number of other machines. Since it uses no machine-specific routines, it should work on the C-128 as well. You can get the program on TPUG (Toronto Pet Users Group) disk (C)U4, but it also should be available from your local user's group.

**What damage can be done to my modem and computer, and other gear attached to them, by a large power surge on the phone line, such as from lightning or a heavy static build-up during a storm? Does it make any difference if the modem is in use at the time or just plugged in? If there is an electrical storm in the area, is it a good idea to unplug the phone line from the modem?**

**Also, I am a ham radio operator and have static discharge traps on my antenna lines. Is there such an item available for phone lines? And can a storm in the place I am connected to by long distance cause me any problems?**

**Richard Miller**
**Visalia, CA**

I've talked to a couple of experts about your first question. It's their opinion that no damage *should* occur during a thunderstorm if the phone line is properly installed and protected. However, I've had a modem get zapped during a thunderstorm, and so has a friend of mine. My modem was in use at the time of the damage; the other fellow's was not.

Whenever there's an electrical storm in my area, I always unplug my modems. Although they should be safe during such an event, it makes me feel better. You certainly won't do any harm by unplugging yours, and you might save yourself a repair bill or the cost of replacing the unit.

While I've never heard of an electrical surge passing beyond a modem to damage a computer, by unplugging the modem you certainly eliminate any chance of that happening. Of course, during a storm you also should unplug your computer system from the wall.

I have heard of protection devices for phone lines, but by deadline time I haven't been able to track any down. I hope to have more news on this next month.

An electrical storm in the area of a system you are connected with by long distance may cause some problems in the form of line noise, and there's always a chance the noise will be bad enough to disconnect you. However, there's no way an electrical surge at the other end can make it

down the lines, through the switching stations and into your modem.

**Are there any bulletin board programs on the market that will work with an RS-232-type modem that I have connected to my C-64 system?**

**Peter Kruml**
**Puyallup, WA**

I can't answer your question with a definite yes or no, but I'll do the best I can. Yes, there are BBS programs for the C-64 that will allow you to use an RS-232 modem. The reason I can't say whether any of them will work with *your* modem is that I know nothing about your modem except that it uses an RS-232 interface.

I have a couple of RS-232 modems kicking around my computer dungeon. One of them is a Hayes 1200, the other is an acoustic type, where you put the telephone handset into cups on the top. The Hayes will work with a BBS program, because it'll answer the phone and do all the other things necessary to run such a system. The acoustic modem has no auto-answer mechanism, so there's no way to have it run a BBS without major modifications and additions. Yet both are RS-232 modems.

In the future, be sure to include all relevant information when you're asking a question about your computer system. The smallest detail may be of vital importance and may make the difference between getting an answer, a baffled look or no response at all.

**I have an automatic modem with a terminal program in it. The program supposedly provides for changing the baud rate to 50, 75, 150, 300, 600, 1200 and 2400, but when I change it to 1200 or 2400, it doesn't work. When I tried to call Quantum-Link on 2400 to find out more about it, I got through, but didn't get anything on the screen.**

**Nathan Boyd**
**Westlake, LA**

Judging from the information you provided in your letter, the only answer I can come up with is that you have a 300-baud modem. Your terminal program can change the baud rate and your computer will go along with that, but you must also have a modem that will support the higher speed.

Many terminal and BBS programs allow you to move the baud rate up a bit while you're on-line, and most 300-baud modems can be coaxed into working a bit faster, but there's no way you can convince a 300-baud modem to handle 1200 or 2400 baud.

I can get my Commodore 1650 modem to work at 450 baud, and it will handle that rate almost all the time. The only problem I have from the increased speed is a few garbled characters every now and then. R

Circle 207 on Reader Service card.

DISKS 40¢ • PANASONIC 1080 $199.95 PANASONIC 1091 $229.95 • commodore 64 EDUCATOR

☑ LIFETIME WARRANTY
☑ TYVEK SLEEVES • LABELS
WRITE PROTECTS • PACKAGED

FACTORY NEW — 1st QUALITY

GENERIC SS/DD 50-99 .55 100 up .40

NEW LOW PRICES
128 • 1571
1541 .... 139.95
64 • 1902

1200 BAUD
HAYES SMART COM COMPATIBLE
$88.00

BY COMMODORE AMIGA™
GIVES YOU A CREATIVE EDGE
NEW LOW PRICE CALL!

M.C.S.
MicroComputer Services
800-433-7756
In Michigan (313) 427-0251
INFO & CUSTOMER SERVICE — (313) 427-0267
HOURS: MON - SAT 10:00 A.M. - 6:00 P.M.
12864 Farmington, Livonia, MI 48150

Canon PJ-1080A
COLOR INK JET
$249.95
LIMITED TIME OFFER

GoldStar
13" COLOR MONITOR
$119.95
NEW with cables

BBS SYSTEM
• EDUCATOR 64
• SFD 1001 DRIVE
• SKYLE'S IEEE
• SOFTWARE
• 1200 BAUD
$599.95

NEW! star NX-10
$239.95
N.L.Q. • SHEET FEEDER
REAR TRACTOR/FRICTION
5K BUFFER

SEIKOSHA SP-1000VC
COMMODORE READY
$169.95
NEAR LETTER QUALITY
FRICTION & TRACTOR
100 CPS • 1.5K BUFFER

COMREX CR-220
$79.95
COMMODORE READY
FROM EPSON
50 CPS • TRACTOR FEED

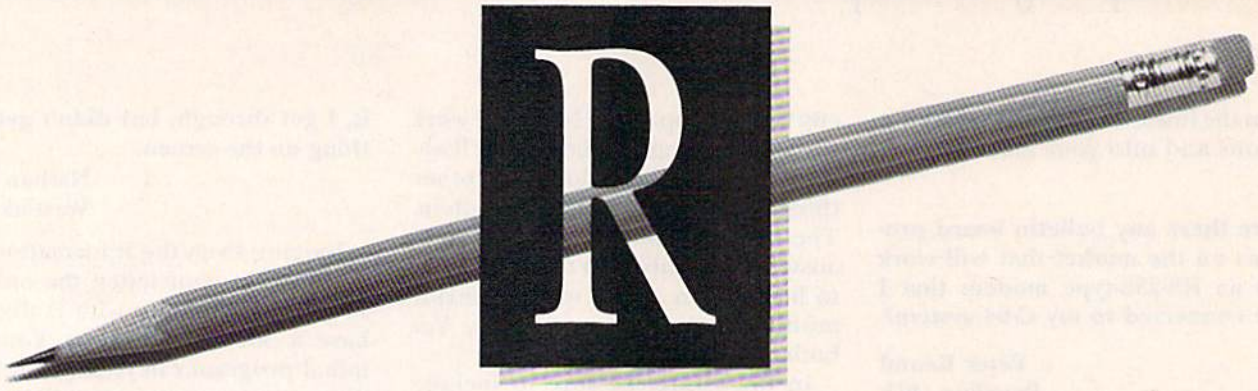
We Bought 'em All
FAR BELOW DEALER COST

RETAIL 499.95
REGULAR DEALER COST 325.00

• 100% C-64 Compatible
• Built in Hi-Res Green Monitor
• Heavy duty power supply and sturdy case
• All units completely refurbished with full 90 day warranty

$199.95
DEALER PRICING AVAILABLE

MC/VISA/C.O.D.
Dealer Inquiries Invited
All prices discounted for cash or check, add 3% for MC/VISA. Shipping: Printers $10.00, Educator $20.00, Disks $6.00 per 100, (West Coast — add $2.00 per order). Add $3.00 for C.O.D. Reduced shipping for large quantities. Prices and availability subject to change without notice. ALL MERCHANDISE CARRIES MANUFACTURERS WARRANTY



By MARGARET MORABITO

*Underwater ecology, a talking teacher, a certificate printer and an idea book highlight this month's Resource Center smorgasbord.*

There are still new developments in educational software for Commodore owners, despite the slowing trend in the industry as a whole. A noteworthy move by Commodore is its decision to package a third-party educational program with each new Commodore 64C.

The first company to join in these efforts, MECC, is well-known in the schools. It's refreshing to see a company like this throwing its support toward the Commodore home computer market.

### *MECC and Commodore*

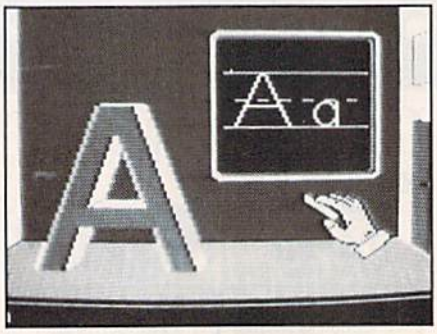
The first MECC program to be bundled with the 64C is called *Odell Lake*. Others will be bundled on a rotating basis. Odell Lake, for ages 8 and up, is a wildlife simulation that teaches survival strategies of creatures in a freshwater lake.

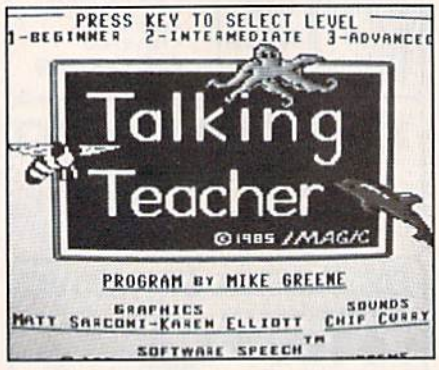
Each student takes on the role of a fish, one of six different kinds. As the fish swims about, it confronts various obstacles and predators. The objective is to make decisions that will enable the fish to survive in its underwater world.

The documentation accompanying the program encourages further study of ecology. It suggests additional topics to be researched, and it provides a chart on which students can record the results of their fish's interaction with other creatures.

There are eight other MECC programs you can buy directly from Commodore for $19 each:

*Path Tactics:* a basic math skills program for ages 5–12 that provides practice in whole numbers and problem solving.




*Spelling Bee:* a drill program for ages 8–13 that introduces and provides practice in spelling and vocabulary skills. It follows a fill-in-the-blank format, with three possible answers displayed.

*Adventures with Fractions:* a program for ages 10–14 that provides practice in placing fractions in order according to size. Both the common denominator and cross-product methods are used.

*Expeditions:* a simulation for ages 10–15, in which students play the roles of American frontiersmen during three historical periods.

*Pre-Reading:* a program for ages 3–7 providing practice in reading-readiness skills such as upper- and lower-case letters, alphabetical ordering, problem solving and correspondence of letters and sounds.

*The Glass Computer:* a simulation for ages 12 to adult that demonstrates the internal workings of a computer. Students get a vivid picture of how a computer functions as it interprets Basic programming statements.

*The Friendly Computer:* a program intended to teach students of ages 5–8 keyboarding skills, the components of their computer system and how to save to disk.

*The Market Place:* a program for ages 8–14 that illustrates through graphics the basic concepts of economics. It includes simulations of business ventures in which students make decisions and test their business acumen.

All these programs can be ordered from Commodore at 1200 Wilson Drive, C2655, West Chester, PA 19380.

### *Talking Teacher*

Firebird Software is known for selling top British game programs here

Circle 79 on Reader Service card.

# A Printer For All Reasons

## Search For The Best High Quality Graphic Printer

**The Results Are In** We ran many printers through our battery of tests and this one came out first in its class. Our SP-1000, built by Seiko is a 100 characters per second, (12 horizontal by 9 vertical matrix), full bi-directional, logic seeking, true descender printer. The character matrix in NLQ (Near Letter Quality) mode is a very dense 24 (horizontal) by 18 (vertical).

**Features That Won't Quit** With the SP-1000 your computer can now print 40, 48, 68, 80, 96, or 136 characters per line. You can print in scores of style variations. You not only have standard Pica, Elite, Condensed and Italics, but also true Superscripts and Subscripts. Use **bold**, or *italics* to make the words stand out. Or, if you wish to be even more emphatic, underline the words. You can combine many modes and styles to make the variation almost endless.

**Forms? Yes! Your Letterhead? Of Course!** The tractors are adjustable from 4 to 10 inches. You can also use single sheets, plain typing paper, your letterhead, short memo forms, labels, whatever you choose. Any size to 10" in width. It will even load your paper automatically. Multiple copies? Absolutely! Use forms up to 3 thick. Spread sheets with many columns? Just go to condensed mode printing and print a full 136 columns wide all on a standard 8½" wide page. Forget expensive wide-carriage printers and having to change to wide carriage paper.

**An Extra Long Life** (2.5 million character) ribbon cartridge is only $11.00. Order #2001. You need absolutely nothing else to start printing—just add paper (single sheet or fanfold tractor).

NOW ONLY $169.95!

The warranty has now been extended to 2 years and service centers are located nationwide for your convenience.

**The Bottom Line:**

**Commodore** C-64 & C-128, Order #2200, graphics interface & cable built in. **$169.95**

**IBM-PC** and compatibles, Order #2100, **$189.95** plus 8' shielded cable #1103, $16.95

**Apple IIc or Macintosh,** Order #2300, **$194.95** with cable, specify computer

**Standard Parallel** with 36 pin Centronics connector, Order #2400, **$189.95** no cable

**Standard Serial** with RS-232 (DB-25) Connector, Order #2500, **$189.95** no cable

Be sure to specify the order # for the correct version printer designed for your computer.

Interfaces and cables for other computers. Call 805/987-2454 for details.

Shipping in cont. US is $10.00. UPS Blue is $22.00.

# Letter Perfect

## Now! Full Feature, 20 CPS, Letter Quality Printer only $279.95

**For those who need a Daisy Wheel Printer, our Daisy 1120 has it all.** To start with, it has a front control panel with indicators for Pitch Selection which allows for 10, 12 or 15 pitch or Proportional Space printwheels. There is a Select (Online) button with indicator and a Line Feed button. You can also set Top-of-Form or Form Feed with the touch of a button. Other indicators include Power and Alarm. The built in 2K buffer allows a page or two of concurrent printing and use of your computer for the next job. To really take advantage of your printer's optional features, the automatic Cut Sheet Feeder eliminates tiresome single page handling and the adjustable Tractor Feed option handles all continuous form paper. Best of all the Daisy 1120 is quiet: only 58 dB.

**Total Compatibility** The Daisy 1120 uses 96 character Diablo® compatible printwheels. At 15 pitch you can print 165 columns—a must for spreadsheets.

The Daisy 1120 uses the Diablo Hytype II® standard ribbon cartridges, also universally available.

Not only is the hardware completely compatible, the control codes recognized by the Daisy 1120 are Diablo 630® compatible (industry standard). You can take advantage of all the great features of your word processing package and automatically use superscripts, subscripts, automatic underlining, boldface and doublestrike.

The printer has a set of rear switches which allow the use of standard ASCII as well as foreign character printwheels. Page length can be set to 8, 11, 12, or 15". The Daisy 1120 can also be switched to add automatic line feed.

Try the Daisy 1120 for 2 weeks. If you are not satisfied we will issue a prompt refund. 1-year parts and labor warranty is included.

**The Bottom Line** Aprotek Daisy 1120 (Order #1120) **$279.95** w/standard Centronics parallel interface, 2K buffer, ribbon and printwheel. Shipping in cont. US is $11. UPS Blue is $24.

**Options:** ***Compare our prices!***
Auto Cut Sheet Feeder (#1110) $185. Shipping $7.
Bidirectional Tractor Feed (#1112) $75. Shipping $5.
Interfaces for most computers are available—call.

**ORDERING INFORMATION** California residents add 6% tax. All prices are cash prices — VISA and MC add 3% to total. We ship the next business day on money orders, cashier's checks, and charge cards. A 14-day clearing period is required for checks. Prices subject to change—CALL. Dealer inquiries invited.

For information call **805/987-2454**
TO ORDER CALL TOLL FREE
**1 (800) 962-5800 - USA** (8-8 PST)
1 (800) 962-3800 - Calif.

Or send order to:

APROTEK DEPT. RN

1071-A Avenida Acaso, Camarillo, CA 93010

in the States. The company has introduced a new educational program, called Talking Teacher, which I find quite good.

Aimed at pre-schoolers through grade 1, Talking Teacher has remarkable speech synthesis built into its software, alleviating the need for a compatible hardware speech module. It talks to the young student as it provides tutoring and practice in recognizing the letters of the alphabet and learning vocabulary words associated with the letters.

Talking Teacher is uncanny at times. For example, in one mode it shows a classroom with a blackboard on the wall. A hand appears and prints a letter both in upper- and lowercase on the board. Then a voice says the letter sound and asks the child to find the letter on the keyboard and press it.

The speech is clear, with inflections that effectively simulate true human speech. Moreover, as the child tries to locate a letter on the keyboard, the Talking Teacher gives spoken hints along the way. For instance, if the child presses an R instead of a B, the computer says, "Try a little lower." The first time this happened with my 3½-year-old son, he really was perplexed because he wasn't accustomed to our computer "understanding" what he was doing.

Each of Talking Teacher's three learning modes offers colorful graphics and sound as children practice their alphabet and keyboarding skills. This is one program that parents and kids alike will enjoy.

Contact Firebird Licensees, Inc., PO Box 49, Ramsey, NJ 07446, or call 201-934-7373 for more information.

### *Certificate Maker*

Coming on the heels of the huge success of Newsroom, Springboard Software recently announced a new program called Certificate Maker. I saw the Apple II version at the Consumer Electronics Show last June, and was told the Commodore version would be out this fall.

Certificate Maker, which lets you create customized certificates to print out and distribute to award winners, should become an instant hit in schools. It offers over 200 pre-designed award certificates, diplomas, licenses and other documents.

The categories include sports, academic achievement, families, children, religion and business. You select the kind of certificate you want to make, choose a border and type in a customized message in one of several type fonts and sizes. You also provide the details for a signature line and enter the date.

Certificate Maker creates a fine-resolution printout that makes the product usable for serious work. Also included are gold-foil seals and colored stickers to adorn your certificates. Furthermore, you can create a name database file that enables you to automatically print any certificate for all names in your file.

I spoke with John Paulson, Chairman of Springboard Software, about the educational programs from his company. Paulson is a former teacher and has strong opinions about what makes good educational software.

In his view, the underlying goal of educators is to provide their students with access to ideas of others and with the ability to communicate effectively. Springboard's educational programs are designed to achieve this goal by providing compelling incentives.

A program such as Newsroom earns its worth as an educational program by providing an alternate route to learning English. It first gets students interested in making a newspaper; then it stimulates them to craft better sentence structure and paragraph development during the editing process.

Those skills that are drudgery to some students become valued in the context of a project that has a physical end product to be spread among friends and the rest of the school community. Paulson is all for giving students the tools to harness the computer to achieve meaningful, real-world results.

Educational software should give the child control over his or her en-

Circle 220 on Reader Service card.

The blood of Kings or of Knaves or both. Family Roots software helps you trace your bloodlines back through lost generations and the mists of time.

For your Apple, IBM, Commodore, Kaypro, TRS-80,* and many others, Family Roots offers all kinds of genealogical assistance: Individual and group sheets, charts, name indices, general search and text capabilities. Adapts to most disk drives, printers, and screens. You get more utility programs, plus lots of personal control. A comprehensive (new) manual is included.

**Blood.**

All for just $185.

Write or call today for more information and a free brochure.

Family Roots™

**Quinsept, Inc.**
P.O. Box 216
Lexington, MA 02173
(617) 641-2930

American Express, Visa, and MasterCard gladly accepted.

* *Trademarks for Apple Computer Inc., International Business Machines, CBM, Inc., Digital Research and Tandy Corp.*

Circle 215 on Reader Service card.

C64/128

**GRAPHICS**

FOR USE WITH **THE NEWSROOM**™ PROGRAM

**RJ's 'NEWS' CLIP ART** $16.95
A Two-Sided Disk Full of New Clip Art Pictures, Special Font Letters, Borders, etc., to make your Newsletters, Signs, Flyers.

FOR USE WITH **FLEXIDRAW**™ PROGRAM

**CLIP ART PLUS DISK** $19.95
A Two-Sided Disk Full of Clip Art, New Fonts, Hi-Res Pictures for Signs, T-shirt Iron-ons, etc.

FOR USE WITH **PRINT SHOP**™ PROGRAM

**HIGH RESOLUTION GRAPHICS** $17.95
Now do your Signs, Flyers, T-shirt Iron-ons, in the excellent detail of Hi-Res Graphics. Two-Sided Disk with full examples and instructions.

**GRAPHICS DISK AND MORE!** $14.95
120 Graphics, 60 Card Verses, Hints, Aids, Examples and Free Graphics-Making Tool.

**THEME GRAPHICS DISK** $12.95
Logo Fixin's, Baseball, Religious, Military, Restaurant, General Subjects

FOR USE WITH **PRINTMASTER**™ PROGRAM

**RJ's ART GALLERY** $16.95
A Disk full of New Graphics for your Greeting Cards, Calendars, Stationery, Signs, Banners, etc.

Add $2.00 for postage & handling. Calif. residents add 6.5% sales tax

SEND CHECK OR M.O. TO:

RJ softshop

4102 E. 7th ST., STE. 207C
LONG BEACH, CA. 90804
Phone (213) 434-1580

The Newsroom is a trademark of Springboard
Print Shop is a trademark of Broderbund Software
Flexidraw is a trademark of Inkwell Systems
Printmaster is a trademark of Unison World Inc.

vironment, as well as provide an easy way to channel creativity. Programs that are easy to use and have printout capabilities, such as Springboard's Newsroom, Certificate Maker and Mask Parade, follow this theme. With hardcopy options, children who have computers can share the results of their activities with friends who don't, giving the computer a more functional social element.

Springboard Software offers a noteworthy product guarantee. If, within a 30-day period, you decide the program isn't really achieving what you had anticipated, you may send it back to Springboard for a full refund.

Contact Springboard Software at 7808 Creekridge Circle, Minneapolis, MN 55435, or call 612-944-3915 for further information.

### *Grolier's Curriculum Guide*

Teachers will be interested in Grolier Electronic Publishing's curriculum guide, which is called *Across the Curriculum*. This 189-page book costs $12 and contains 100 lesson plans for use in the classroom. While it's designed to show teachers how to incorporate the various Grolier educational programs into their classes, I see the guide as useful to teachers who have other brands of educational software.

*Across the Curriculum* is an idea book. The major subject areas covered are mathematics, language arts, science, special education, social studies and library science. Each lesson plan includes a stated learning objective, appropriate grade levels, how to prepare for the lesson, the actual components of the activity, special notes and instructions for modifying the lesson.

There are also worksheets in the book that you can photocopy for distribution to the class. Answers are provided, and there's a list of resources to consult for additional assistance in your efforts to teach with computers.

This type of support for schools is needed on a larger scale. I'd like to see more educational software companies providing such idea books for parents and teachers.

For more information, contact Grolier Electronic Publishing, Inc., Sherman Turnpike, Danbury, CT 06816, or call 800-858-8858.

## Free Educational Program Disk

The Resource Center's readers have been very generous in donating their educational programs to the Center. By mid-June I had already received several dozen programs of high quality, covering a variety of subject areas. This spirit of commitment and sharing is inspiring.

As I mentioned in the June column, these programs will be placed on-line in The Resource Center special-interest group on QuantumLink. In addition, for those of you who aren't on Q-Link, I've collected these programs on a disk you can get for free from me here at *RUN*.

To get The Resource Center Educational Disk, just send me a blank disk and your name and address. I'll make a copy and get it off to you as quickly as I can. R

*If you're using Commodore computers for educational purposes (at home or in school) and would like to share your experiences through The Resource Center, write me a letter detailing the equipment you're using, subject areas being taught, grade level or age of your students, software that you are using and any other information you feel like including.*

*Also, if you'd like to donate public-domain educational programs to The Resource Center for sharing with other educators and parents, please send along a disk with a brief description of the programs. Send correspondence and disks to:*

*Margaret Morabito*
*The Resource Center*
*c/o* RUN *Editorial*
*80 Pine St.*
*Peterborough, NH 03458*

*You can also leave mail in my on-line mail boxes: CompuServe (70616,714) and Q-Link (MARGM).*

Circle 122 on Reader Service card.

COMPBANK—64

- REPLACES YOUR MANUAL CHECKBOOK.
- PRINTS CHECKS!!!
- STORES DATA FOR LATER USE.
- KEEPS TRACK OF CHECKS OUTSTANDING.
- LISTS BY DATE OR ACCOUNT NUMBER ON SCREEN OR PRINTER.
- AUTOMATIC RECONCILATION.

ORDER COMPBANK—64
$19.95 PLUS $2.00 S&H
FLA. RES. ADD 5% TAX
INCLUDES MANUAL

REQUIRES DISK DRIVE. ALSO REQUIRES ADDITIONAL FORMS TO PRINT CHECKS

VISA CALL 1-800-628-2828 EXTENSION 552 MasterCard

SUNRISE SOFTWARE
8901 NW 26 ST
SUNRISE, FL 33322

Circle 205 on Reader Service card.

VideoFile
FOR HOME VCR USERS

Use your computer to:

- *locate anything you have on your tapes,*
- *generate a list of all recorded items, alphabetically or in order of length,*
- *instantly find the best available space for new materials,*
- *avoid accidental erasures,*
- *convert counter numbers into hrs:minutes,*
- *and much, much more, quickly and effortlessly,*

with **VideoFile,** so logically written and fun to use, any member of the family can learn to use it in minutes. Say goodbye to the messy scraps of paper and scribbled tape boxes, and get **VideoFile!**

Since **VideoFile** is its own best salesman, there's a demo disk for $10.00. Return it and take $10.00 credit towards **VideoFile!** (Sorry, no Apple demo.)

**Note new prices:** Commodore-64/128: $29.95, Apple ][ (min. 64K): $39.95, and IBM-PC, compatibles & expanded PCjr: $49.95.

**VideoFile**
Box 480210, Dept., R9, Los Angeles, CA 90048

☐ Send **VideoFile** disk:
☐ *C-64/128 ($29.95)* ☐ *Apple ][ ($39.95)* ☐ *IBM-PC ($49.95)*
☐ Send **VideoFile** demo disk. ($10.00):
☐ *C-64/128* ☐ *IBM-PC*

Name .....
Address .....
City ..... State .... Zip .....
*(CA residents must include 6½% sales tax)*

*From p. 13.*

**$32A Keeping track of disk commands**—If you have a C-128, you now have the problem of remembering two sets of disk commands.

I keep a list of C-64 disk commands on one side of a 5 × 8 index card and the C-128 list on the other side. Then I prop up the card between my 128's vent panel and monitor stand. Thus, both sets of disk commands are readily visible.

**Eric Pickell**
**Palatine, IL**

**$32B Copying with RUN Script 64 1.0**—Did you know that your copy of RUN Script 64 1.0 can double as a handy machine language code copier? Load and run RUN Script 64 1.0, then insert into your disk drive a disk containing the machine language program to be copied. With the F1 and L keys, load the program file into RUN Script's text area as you would a text file. Now insert another formatted disk into the drive and copy the code to the disk with the F1 and S keys, followed by a filename.

This is a fast and handy method of copying RUN Script ML code and character sets, but be careful—some ML code may save at an improper address and become corrupted. Also, Basic programs cannot be copied this way without extensive modifications.

**Tim Walsh**
**RUN Staff**

**$32C RUN Script 64 reversed characters**—If you have a favorite character set you would like to use with RUN Script 64 1.0, but can't because it lacks reversed characters, here's a fix to get around that problem. First, using the copy method outlined in the above Magic trick, copy the character set(s) you want to use to a disk containing a copy of RUN Script 64 1.0. Next, load and run RUN Script using the standard C-64 character set or any other character set that has reversed characters. Once RUN Script is activated, exit it via the F1 and X keys.

Next, load in the Boot program and change the character set name that resides there to the filename of the preferred character set you saved on the disk. Now run the boot program. Your new character set has replaced the original one. In most instances, you will still retain the first set's reversed characters that are needed for the command bar and printer macros.

**Tim Walsh**
**RUN Staff**

**$32D Double speed C-64**—This trick is of interest to anyone who uses the C-128 in C-64 mode. The program shows how to take advantage of the Fast (2 MHz) mode in your C-64 programs.

```
10 OT=TI:PRINT"{SHFT CLR}DOUBLE SPEED C64 -
   RAMOKOTA REDDY
20 GOTO30: POKE53296,1
30 FORI=1TO924
40 B=I*SIN(I):
50 NEXTI
60 POKE53265,PEEK(53265)OR16:POKE53296,0
65 T=(TI-OT)/60
70 PRINT"{SHFT CLR}TIME=";T:PRINTTAB(17)"{C
   RSR UP}SECONDS
```

After you run it, the program will display that it took nearly 30 seconds to execute. Now, remove the GOTO 30 from line 20 and run it again. The screen will scramble as the program executes in Fast (2 MHz) mode. Once it is reset in line 60 to Slow (1 MHz) mode, the screen will regain its composure and clear itself. The result? The program will tell you it took less than 15 seconds to run. Use this trick when you want to reduce the execution times of Basic and machine language C-64 programs running on the C-128.

**Ramakota Reddy**
**Iowa City, IA**

**$32E Doing 128 Loop-Do-Loops**—The C-128's Basic 7.0's Do While and Loop While commands can be used in the same Do...Loop. This simplifies some difficult programming tasks. The following program illustrates this with the Shell binary sort:

```
10 PRINT"{SHFT CLR}DO WHILE, LOOP WHILE, DO
   ..LOOP - FRED RANSOM
20 DIMA$(500):NO=-1:DO:NO=NO+1:PRINT"ENTER
   CHARACTERS, * WHEN FINISHED":{2 SPACEs}I
   NPUT A$(NO):LOOP UNTIL A$(NO)="*":NO=NO-
   1:PRINT"NUMBER OF ENTRIES = ";NO+1
30 REM SORT
40 PRINT"START SORT: ";TI$:X=TI:D=NO:DO:D=I
   NT(D/2):PRINTD,:FORK=D TO2*D-1:FORI=K TO
    NOSTEPD:J=I:T$=A$(J):DO WHILE A$(J-D)>T
   $:A$(J)=A$(J-D):J=J-D:LOOP WHILE J>=D
50 A$(J)=T$:NEXT:NEXT:LOOP WHILE D>1:Y=TI:P
   RINT"{2 CRSR DNs}COMPLETED: "TI$:PRINT"T
   OTAL TIME: ";(Y-X)/60;"SECONDS": FOR I=1
   TONO:PRINTA$(I),:NEXT:END
```

**Fred Ransom**
**Oxnard, CA**

**$32F Input control**—Inputting commas or colons necessary in Input statements results in an Extra Ignored error and the loss of the punctuation marks and any data following them. Here's a short routine to put them, along with the data following, into Input statements. The secret is to begin the input with a quotation mark that will validate the use of commas and colons within input data. The following program makes the beginning quotation mark the same color as the background, thereby making the input prompt appear normal.

```
10 REM INPUT CONTROL - NICK PECK
20 CC=PEEK(646):OPEN3,3:CMD3:
21 PRINT"ENTER YOUR AGE, NAME (LAST,FIRST)
   OR '*'TO EXIT";
25 POKE631,29:POKE198,1
30 POKE646,PEEK(53281):PRINTCHR$(34);:POKE2
   12,0:PRINT"{CRSR LF}";
```

→

*Listing continued.*

```
40 POKE646,CC:INPUTA$:IF A$="*"THEN SYS 204
   8
45 PRINT#3:PRINT"{2 CRSR DNs}"A$:CLOSE3
50 GOTO 20
```

**Nick Peck**
**Sherwood, OR**

**$330 C-128 Lo-Res screen dump**—Use this subroutine to create hard copies of screen displays. It works in both 40- and 80-column modes—it even does windows!

```
10 REM C128 SCREEN DUMP - MIKE TRANCHEMONTA
   GNE
20 OPEN3,3:OPEN4,4,7,CHR$(13):PRINTCHR$(19)
   ;
30 FOR Y=0TORWINDOW(0)
40 IF RWINDOW(2)=40THENPRINT#4,CHR$(14);
50 FORX=0TORWINDOW(1)
60 GET#3,A$:A=ASC(A$)
70 IF(AAND127)>31THENPRINT#4,A$;
80 NEXTX:PRINT#4,CHR$(13)
90 NEXTY:CLOSE3:CLOSE4
```

**Mike Tranchemontagne**
**Nashua, NH**

**$331 C-128 Hi-res screen dump**—This C-128 40-column mode program, like some housekeepers, doesn't do windows. However, it does perform accurate screen dumps of both standard and multicolor bit-map screens.

```
100 REM C-128 HIRES SCREEN DUMP - JERRY JAR
    VIS
115 IFRGR(X)>2THEN MODE=159:ELSE MODE=319
120 OPEN3,4:FORY=0 TO 199STEP 7
130 PRINT#3,CHR$(15);SPC(10);CHR$(8);
140 FORX=0 TO MODE:CH=0:FORM=0TO6
150 LOCATE X,Y+M:IF RDOT(2)>0THENCH=CH+2{UP
     ARROW}M
155 NEXT
160 CH=CH OR 128:A$=A$+CHR$(CH):PRINT#3,A$;
    :A$="":NEXTX
170 PRINT#3,CHR$(8):NEXTY:CLOSE3:END
```

**Jerry Jarvis**
**Spokane, WA**

**$332 C-64 wedge and the Auto Menu program**—Here's a fast and simple way to use the Auto Menu program (see *RUN*, April 1986) with the C-64 wedge. First, copy the DOS 5.1 program onto the disk containing the Auto Menu program. Then add these lines to the program:

```
8 IFA=0THENA=1:LOAD"DOS 5.1",8,1
9 IFA=1THENSYS12*4096+12*256
```

The Auto Menu program will first load the C-64 wedge, then begin working normally. The C-64 wedge commands are now available, and the Auto Menu program can be used over again by typing "/ AUTO MENU" and RUN.

**Richard Reisig**
**Mitchell, NE**

*Compiled by* RUN *staff members Harold R. Bjornsen, Margaret Morabito and Tim Walsh*


# RUN CLASS ADS

**Graphic Environment Operating System** GEOS

By Berkeley Softworks, with geoWrite, geoPaint, diskTurbo, deskTop, etc.. Also includes QuantumLink program and 156 page GEOS User's Guide.

All for $44.95 This is IT!

All Text in this *RUN* CLASS AD was generated with GEOS fonts.

Order today. JOIN the GEOS GENERATION. Please add $3.00 handling and shipping. (Shipped UPS same day subject to availability).

VISA, MasterCard welcomed.

Call **intelLogic.** (800) 672-2887 Ask for Cindy.

GEOS GEOS GEOS GEOS GEOS GEOS

TM Berkeley Softworks

**"THE LOVEGAME" for ADULTS ONLY**

Interactive fantasy game for two or more intimate players. Amusing and suggestive trivia quiz format with provocative "Scoring" system! Commodore 64/128 $24.95 postpaid

**ALVA DATA Dept J1**
**28 Alva Street, New Bedford, MA 02740**

**BATTERIES INCLUDED CUSTOMER SUPPORT** BATTERIES INCLUDED

Having problems? Need help? If you have questions about BATTERIES INCLUDED software, call the BI CUSTOMER SUPPORT HOTLINE! Our exclusive support phone number is (416) 881 9816. Our hours are 9 am to 4 pm Monday to Friday. The best time to call—mornings (EST). Worst time to call—Midday! Because this is a free service we must ask that you keep your call brief and to the point. A limit of 5 minutes of free time is permitted per call. If our lines are busy, be patient; if all else fails, please re-read the manual. If you would rather write to us, we'll be glad to send you a personal reply. This service is for registered owners only.

**BATTERIES INCLUDED CUSTOMER SUPPORT**
**30 Mural St., Richmond Hill, Ont., Canada L4B 1B5 (416) 881 9816**

**LOTTERY PLAYERS!**

You've got an edge in the Big Money State LOTTOS by using your computer to do a probability study of the past drawings. Don't waste your time with random numbers, this program performs an analysis of the past winning 6 digit numbers and tells you what numbers are due, what groups to play, any trends and much more! It's available on disk with instructions for all states and Canada. COMMODORE 64/128, ATARI, APPLE, IBM & OTHERS. VISA, MC, Checks. Fast Service! $21.95.

**SOFT-BYTE**
**COMPUTER PROGRAMS**
**P.O. Box 556 • Forest Park • Dayton, OH 45405**
**513-233-2200**

**_____**

***RUN* Class Ad Section**

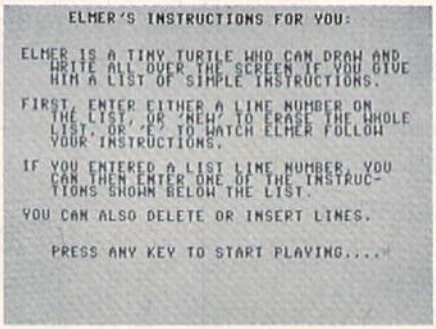
*RUN*'s New Class Ad section is an opportunity for those with Commodore products to reach *RUN*'s 220,000 readers, at very affordable prices. Considering that *RUN* was the second fastest growing consumer magazine in 1985 (according to the Audit Bureau of Circulation), *RUN*'s circulation is bound to grow even higher in the coming months.

If you have any questions about *RUN*'s Class Ad section, call **Heather Paquette at 800-441-4403 or 603-924-9471.** We accept checks, money orders, Master Card or VISA.

*From p. 48.*

*Listing 1 continued.*

```
34 B$="{SHFT CLR}{CTRL 1}{5 SPAC
   Es}ELMER'S INSTRUCTIONS FOR Y
   OU:{CTRL 3}"              :REM*42
36 TL=1:GOSUB 295Ø:PRINT "{CRSR
   LF} {CRSR LF}{2 CRSR DNs}";A$
   ;                         :REM*246
38 FOR A=1 TO LEN(B$)-3:PRINT "{
   CRSR LF} {2 CRSR LFs}*";:GOSU
   B 275Ø:NEXT A             :REM*232
4Ø READ B$:IF B$="END" THEN 6Ø
                             :REM*128
42 PRINT "{CRSR LF} {CRSR LF}{CR
   SR DN}";A$;:GOSUB 295Ø:REM*14
44 READ B$:IF B$="END" THEN 6Ø
                             :REM*132
46 PRINT "{CRSR LF} {CRSR LF}{CR
   SR DN}";A$;:A=LEN(B$):FOR C=1
    TO A                     :REM*166
48 PRINT "{CRSR LF}";MID$(B$,A-C
   +1,1)"{2 CRSR LFs}";A$;
                             :REM*88
5Ø GOSUB 275Ø:NEXT C:GOTO 4Ø
                             :REM*196
6Ø TL=4Ø                     :REM*174
62 GET B$:IF B$<>"" THEN 1ØØ
                             :REM*114
64 PRINT "{CRSR LF} ";:GOSUB 275
   Ø                         :REM*238
66 PRINT "{CRSR LF}";A$;:GOSUB 2
   75Ø:GOTO 62               :REM*92
1ØØ :                        :REM*76
14Ø REM VARIABLES            :REM*86
17Ø READ B$:IF B$="END"THENBL=B:
   GOTO2ØØ                   :REM*2Ø4
18Ø B=B+1:B$(B)=B$:B(B)=LEN(B$)
                             :REM*136
19Ø READ C(B):GOTO 17Ø       :REM*114
2ØØ S$="{13 SPACEs}"         :REM*178
21Ø ER$="{CRSR UP}"+S$+S$+S$+"{C
   RSR UP}"                  :REM*116
22Ø TL=5Ø:AL=36:D=54272:U=1Ø
                             :REM*176
699 :                        :REM*165
7ØØ REM ....RESTART ADDRESS
                              :REM*4
71Ø :                        :REM*176
73Ø REM STATEMENT LIST DISPLAY
                             :REM*98
735 POKE 5328Ø,3:POKE 53281,3:PO
   KE 646,6                  :REM*75
74Ø PRINT "{SHFT CLR}";:N=18:FOR
    O=1 TO 18                :REM*6
75Ø PRINT "{CTRL 3}";RIGHT$(STR$
   (O),2);". ";              :REM*232
76Ø PRINT "{CTRL 7}";A$(O);TAB(2
   Ø);                       :REM*126
77Ø PRINT "{CTRL 3}";RIGHT$(STR$
   (O+N),2);". ";            :REM*99
78Ø PRINT "{CTRL 7}";A$(O+N):NEX
   T O:PRINT                 :REM*55
79Ø IF Q=1 THEN 98Ø          :REM*65
8ØØ :                        :REM*11
81Ø REM LINE # INPUT         :REM*39
83Ø INPUT "LINE #, 'E' OR 'NEW'"
   ;I$                       :REM*29
84Ø PRINT ER$:IF I$="E" THEN 161
   Ø                         :REM*185
85Ø IF I$<>"NEW" THEN 87Ø
                             :REM*179
86Ø FOR A=1 TO 36:A$(A)="":NEXT:
   GOTO71Ø                   :REM*115
87Ø I=LEN(I$):IF I<1 OR I>3 THEN
    94Ø                      :REM*221
88Ø IF I$="Ø" THEN 94Ø       :REM*31
89Ø N=ASC(I$):IF N<49 OR N>57 TH
   EN 94Ø                    :REM*2Ø9
9ØØ N=ASC(RIGHT$(I$,1)) :REM*211
91Ø IF N<49 AND N>57 THEN 94Ø
                             :REM*33
92Ø A=VAL(I$)                :REM*39
93Ø IF A>Ø AND A=<AL THEN 98Ø
                             :REM*213
94Ø GOSUB 25ØØ:IF U=Ø THEN 81Ø
                             :REM*99
95Ø PRINT "{SHFT CLR}{4 CRSR DNs
   }"                        :REM*175
96Ø GOTO 71Ø                 :REM*189
97Ø :                        :REM*181
98Ø REM STATEMENT DISPLAY:REM*39
1ØØØ Q=1:PRINT "{CRSR UP}{CTRL 2
   }";                       :REM*153
1Ø1Ø FOR M=1 TO 3:FOR N=Ø TO 3
                             :REM*237
1Ø2Ø B=M+N*3:IF B>BL THEN 1Ø4Ø
                             :REM*2Ø3
1Ø3Ø PRINT TAB(N*1Ø);B$(B);
                             :REM*234
```


ELMER'S INSTRUCTIONS FOR YOU:
ELMER IS A TINY TURTLE WHO CAN DRAW AND WRITE ALL OVER THE SCREEN IF YOU GIVE HIM A LIST OF SIMPLE INSTRUCTIONS.
FIRST, ENTER EITHER A LINE NUMBER ON THE LIST, OR 'NEW' TO ERASE THE WHOLE LIST, OR 'E' TO WATCH ELMER FOLLOW YOUR INSTRUCTIONS.
IF YOU ENTERED A LIST LINE NUMBER, YOU CAN THEN ENTER ONE OF THE INSTRUCTIONS SHOWN BELOW THE LIST.
YOU CAN ALSO DELETE OR INSERT LINES.
PRESS ANY KEY TO START PLAYING....

```
1Ø4Ø NEXT N:PRINT:NEXT M:REM*134
1Ø5Ø PRINT "{CTRL 2}I{CTRL 8}NSE
   RT{4 SPACEs}{CTRL 2}D{CTRL
   8}ELETE{4 SPACEs}";:REM*138
1Ø6Ø PRINT "{CTRL 2}B{CTRL 8}ACK
    TO LINE #{CRSR DN}"
                             :REM*244
1Ø7Ø :                        :REM*26
1Ø8Ø REM STATEMENT INPUT :REM*94
11ØØ PRINT "{CTRL 7}LINE";A;:I$=
   "":INPUT I$               :REM*122
111Ø PRINT ER$:IF I$="" THEN GOS
   UB 25ØØ:GOTO 1Ø7Ø         :REM*168
112Ø IF I$="I" THEN 154Ø:REM*2Ø2
113Ø IF I$="D" THEN 158Ø:REM*146
114Ø IF I$="B" THEN Q=Ø:GOTO 71Ø
                              :REM*92
115Ø :                       :REM*1Ø6
116Ø REM IS 'I$' VALID? :REM*186
118Ø B=Ø:I=LEN(I$)           :REM*38
119Ø B=B+1:IF B>BL THEN GOSUB 25
   ØØ:GOTO 1Ø7Ø              :REM*1Ø
12ØØ IF LEFT$(I$,B(B))<>B$(B) TH
   EN 119Ø                   :REM*24Ø
121Ø REM ....STMT #C         :REM*218
122Ø C=C(B):IF C>Ø THEN 126Ø
                             :REM*172
123Ø REM ....STMT TYPE Ø :REM*76
124Ø IF I$=B$(B) THEN A$(A)=I$:Q
   =Ø:GOTO 71Ø               :REM*128
125Ø GOTO 137Ø               :REM*188
126Ø M$=RIGHT$(I$,I-B(B))
                             :REM*212
127Ø GOSUB 259Ø               :REM*74
128Ø J$=M$:J=LEN(J$):IF C>1 THEN
    142Ø                     :REM*59
129Ø REM ....STMT TYPE 1  :REM*9
13ØØ IF J=Ø OR J>2 THEN 137Ø
                             :REM*129
131Ø N=ASC(LEFT$(J$,1))   :REM*47
132Ø IF N<48 OR N>57 THEN 137Ø
                             :REM*1Ø9
133Ø N=ASC(RIGHT$(J$,1)):REM*131
134Ø IF N<48 OR N>57 THEN 137Ø
                             :REM*129
135Ø N=VAL(J$):IF B=8 AND N<16 T
   HEN 146Ø                  :REM*179
136Ø IF B<>8 AND N>Ø THEN 146Ø
                             :REM*221
137Ø GOSUB 25ØØ:GOTO 1Ø7Ø:REM*21
142Ø IF C>2 THEN 148Ø        :REM*33
143Ø REM ....STMT TYPE 2 :REM*23
144Ø IF J<>1 THEN 137Ø    :REM*173
145Ø N=ASC(J$):IF N<33 OR N>95 T
   HEN 14ØØ                  :REM*2Ø7
146Ø REM ....I$ IS VALID STATEME
   NT                        :REM*121
147Ø A$(A)=B$(B)+" "+J$:Q=Ø:GOTO
    71Ø                       :REM*3
148Ø IF C>3 THEN 137Ø     :REM*123
149Ø REM ....STMT TYPE 3:REM*211
15ØØ IF MID$(I$,5,1)=" " THEN 15
   2Ø                        :REM*2Ø3
151Ø I$=LEFT$(I$,4)+" "+MID$(I$,
   5)                        :REM*153
152Ø N=LEN(I$):IF N<6 OR N>15 TH
   EN 137Ø                   :REM*133
153Ø A$(A)=I$:Q=Ø:GOTO 71Ø
                             :REM*87
154Ø REM ....INSERT BLANK LINE
                             :REM*92
155Ø FOR M=35 TO A STEP -1
                             :REM*132
156Ø A$(M+1)=A$(M):NEXT M:REM*28
157Ø A$(A)="":Q=Ø:GOTO 71Ø
                             :REM*84
158Ø REM ....DELETE LINE:REM*1Ø8
159Ø IF A=36 THEN 16ØØ    :REM*72
1595 FOR M=A TO 35:A$(M)=A$(M+1)
   :NEXT                     :REM*185
16ØØ A$(36)="":Q=Ø:GOTO 71Ø
                             :REM*156
161Ø :                        :REM*56
162Ø REM BEGIN EXECUTION:REM*174
164Ø X=1:Y=1:REM{4 SPACEs}INITIA
   L POSITION                :REM*4
165Ø E=2:REM{8 SPACEs}INITIAL PE
   N POSITION                :REM*2Ø
166Ø H$="*":REM{5 SPACEs}INITIAL
    CHARACTER                :REM*4
167Ø L=6:REM{8 SPACEs}INITIAL CO
   LOR #                     :REM*1Ø4
168Ø POKE 5328Ø,5:REM{2 SPACEs}B
   ORDER COLOR               :REM*176
169Ø PRINT "{SHFT CLR}":GOSUB 27
   7Ø:GOSUB 271Ø             :REM*248
17ØØ REM ....STATEMENT LIST
                             :REM*146
171Ø FOR A=1 TO AL:A$=A$(A)
                             :REM*2Ø6
172Ø IF A$="" THEN 233Ø      :REM*158
173Ø B=Ø                     :REM*1Ø8
174Ø B=B+1                    :REM*56
175Ø IF LEFT$(A$,B(B))<>B$(B) TH
   EN 174Ø                   :REM*22
176Ø ON B GOTO 178Ø,185Ø,192Ø,19
   9Ø,2Ø6Ø,21ØØ,213Ø,217Ø,221Ø
   ,229Ø                     :REM*12
177Ø :                       :REM*216
178Ø REM ....RIGHT           :REM*164
179Ø M$=RIGHT$(A$,LEN(A$)-B(B))
                             :REM*1Ø6
18ØØ GOSUB 259Ø:M=VAL(M$):REM*45
181Ø FOR N=1 TO M:GOSUB 237Ø
                             :REM*229
182Ø X=X+1:IF X=41 THEN X=1
                             :REM*179
183Ø GOSUB 271Ø:NEXT N:GOTO 233Ø
                             :REM*121
184Ø :                        :REM*31
185Ø REM ....UP               :REM*31
186Ø M$=RIGHT$(A$,LEN(A$)-B(B))
                             :REM*177
187Ø GOSUB 259Ø:M=VAL(M$)
                             :REM*115
188Ø FOR N=1 TO M:GOSUB 237Ø
                             :REM*43
189Ø Y=Y-1:IF Y=Ø THEN Y=25
                              :REM*7
19ØØ GOSUB 271Ø:NEXT N:GOTO 233Ø
                             :REM*191
191Ø :                       :REM*1Ø1
192Ø REM ....DOWN            :REM*197
193Ø M$=RIGHT$(A$,LEN(A$)-B(B))
                             :REM*247
194Ø GOSUB 259Ø:M=VAL(M$)
                             :REM*185
195Ø FOR N=1 TO M:GOSUB 237Ø
                             :REM*113
```

→

*Listing 1 continued.*

```
196Ø Y=Y+1:IF Y=26 THEN Y=1
                          :REM*213
197Ø GOSUB 271Ø:NEXT N:GOTO 233Ø
                          :REM*5
198Ø :                    :REM*171
199Ø REM ....LEFT         :REM*251
2ØØØ M$=RIGHT$(A$,LEN(A$)-B(B))
                          :REM*61
2Ø1Ø GOSUB 259Ø:M=VAL(M$)
                          :REM*255
2Ø2Ø FOR N=1 TO M:GOSUB 237Ø
                          :REM*183
2Ø3Ø X=X-1:IF X=Ø THEN X=4Ø
                          :REM*87
2Ø4Ø GOSUB 271Ø:NEXT N:GOTO 233Ø
                          :REM*75
2Ø5Ø :                    :REM*242
2Ø6Ø REM ....PEN UP       :REM*218
2Ø7Ø IF E=Ø THEN E=1      :REM*72
2Ø8Ø GOTO 233Ø            :REM*134
2Ø9Ø :                    :REM*26
21ØØ REM ....PEN DOWN     :REM*246
211Ø E=Ø:GOTO 233Ø        :REM*2Ø
212Ø :                    :REM*56
213Ø REM ....CHAR         :REM*244
214Ø H$=RIGHT$(A$,1):GOSUB 277Ø
                          :REM*88
215Ø P=983+X+Y*4Ø:POKE P,K
                          :REM*248
2152 GOSUB 275Ø:GOTO 233Ø
                          :REM*212
216Ø :                    :REM*96
217Ø REM ....COLOR        :REM*192
218Ø L=VAL(MID$(A$,6)):P=983+X+Y
     *4Ø                  :REM*84
219Ø POKE P+D,L:GOSUB 275Ø:GOTO
     233Ø                 :REM*68
22ØØ :                    :REM*136
221Ø REM ....TEXT         :REM*Ø
222Ø A$=MID$(A$,6):M=LEN(A$)
                          :REM*1Ø
2225 X=X-1:IF X=Ø THEN X=4Ø
                          :REM*27
223Ø GOSUB 237Ø:J=K:FOR N=1 TO M
                          :REM*222
224Ø H$=MID$(A$,N,1):GOSUB 277Ø
                          :REM*224
225Ø X=X+1:IF X=41 THEN X=1
                          :REM*98
226Ø GOSUB 271Ø:NEXT N    :REM*134
227Ø K=J:F=1:M=1:GOTO 181Ø
                          :REM*164
228Ø :                    :REM*216
229Ø REM ....STOP         :REM*188
23ØØ A$=""                :REM*36
231Ø GET A$:IF A$="" THEN 231Ø
                          :REM*35
232Ø GOTO 233Ø            :REM*119
233Ø NEXT A:Q=Ø:GOTO 71Ø:REM*129
234Ø :                    :REM*21
235Ø REM SUBROUTINES      :REM*61
236Ø :                    :REM*41
237Ø REM ....ERASE PREVIOUS POIN
     T?                   :REM*255
238Ø IF F=1 THEN F=Ø:RETURN
                          :REM*131
239Ø IF E=1 THEN E=2:RETURN
                          :REM*7
24ØØ IF E=2 THEN POKE P+D,V:POKE
      P,W                 :REM*153
241Ø RETURN               :REM*173
242Ø :                    :REM*1Ø1
243Ø REM ....INSTRUCTION INPUT
                          :REM*169
244Ø PRINT "{HOME}{22 CRSR DNs}"
                          :REM*179
245Ø PRINT "{CTRL 3}{7 SPACEs}PR
     ESS ANY KEY TO ";    :REM*179
246Ø PRINT "CONTINUE{CTRL 7)":A$
     =""                  :REM*231
247Ø GET A$:IF A$="" THEN 247Ø
                          :REM*9
248Ø PRINT "{SHFT CLR}{3 CRSR DN
     s}":RETURN           :REM*41
249Ø :                    :REM*171
25ØØ REM ....ERROR MESSAGE
                          :REM*249
251Ø PRINT ,"{CTRL 1}I DON'T UND
     ERSTAND THAT"        :REM*167
252Ø GOSUB 256Ø:PRINT ER$
                          :REM*125
253Ø PRINT ,"PLEASE TRY AGAIN{CT
     RL 7}"               :REM*251
254Ø GOSUB 256Ø:PRINT ER$:RETURN
                          :REM*7
255Ø :                    :REM*231
256Ø REM ....SCREEN MESSAGE DELA
     Y                    :REM*98
257Ø FOR T=1 TO 5ØØ:NEXT T:RETUR
     N                    :REM*144
258Ø :                    :REM*6
259Ø REM ....TRUNCATE M$  :REM*64
26ØØ IF M$="" THEN RETURN
                          :REM*194
261Ø M=ASC(LEFT$(M$,1))   :REM*72
262Ø IF M=32 THEN 264Ø    :REM*192
263Ø IF M<>16Ø THEN 265Ø  :REM*22
264Ø M$=RIGHT$(M$,LEN(M$)-1):GOT
     O 261Ø               :REM*2Ø
265Ø IF M$="" THEN RETURN
                          :REM*244
266Ø M=ASC(RIGHT$(M$,1)):REM*186
267Ø IF M=32 THEN 269Ø    :REM*6
268Ø IF M<>16Ø THEN RETURN
                          :REM*174
269Ø M$=LEFT$(M$,LEN(M$)-1):GOTO
      265Ø                :REM*4Ø
27ØØ :                    :REM*126
```

→


Circle 156 on Reader Service card.

# $5 TALKING DISK

**OVER 100 WORDS** in vocabularies that you can put into your own programs! No extra hardware required. Sample programs include:

- Talking four-function calculator — choose English, Spanish, or German.
- Talking keyboard — letters and punctuation in English.
- Demonstration of voice editing.

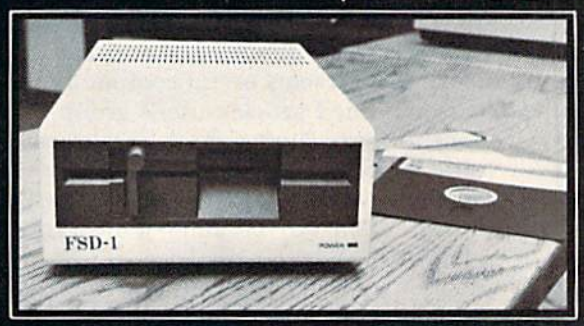
The $5 Talking Disk is available for Commodore 64, 128, Atari 800, 800XL, 130XE, and Apple II+ (64K), IIe, and IIc.

If you want to make your own vocabularies, in any language or accent, then you must have a VOICE MASTER for processing speech input. VOICE MASTER lets you do much more: YOU CAN RECOGNIZE SPOKEN COMMANDS and WRITE MUSIC AS YOU HUM! And affordable too — under $90 including the headset and microphone.

Send $5 for the talking disk. Prepaid orders only. Includes postage. ($7 outside USA, Canada, and Mexico.) Information on VOICE MASTER will accompany your disk. Or you can call or write for VOICE MASTER information separately. Please specify computer make and model with your order.

**COVOX INC.**
675 Conger St., Dept. R
Eugene, OR 97402
Telephone (503) 342-1271

# Commodore Compatible and only. . . $139.00




**FSD-1 5¼"Disk Drive**
**Directly replaces the Commodore 1541 disk drive.**

**Check these Features**

- Runs all C-64 Software — Including heavy copyright protected software
- Full 6 month warranty — your assurance of quality
- Heavy duty construction — to run whisper quiet and smooth year after year
- Built in 24 watts solid state power supply — runs cool and efficient always
- Vented metal chassis — eliminates most radio-frequency interference
- Dual serial ports with chaining option for expandability
- External device number switches — for use as second disk drive
- Save and replace capability
- Positive lever locking system — to eliminate "Pop out" problem
- Standard 5¼" SSSD Diskette, 175K storage capacity, 310 RPM running speed, 90 Sec. format time, 1200 BPS data transfer — same as the 1541
- Compatible with C-128 in C-64 mode

**To Order Call Toll Free 1-800-356-5178**

Visa & MasterCard welcome. Credit Card orders shipped in 24 hrs. Allow $8.00 shipping and handling. Send mail order with payment to:

ECI
Emerald Component International Dept. RN
541 Willamette Street
Eugene, OR 97401
Tel. 503-683-1154

Circle 60 on Reader Service card.

**DELUXE RS232 INTERFACE**

- COMPATIBLE WITH ALL STANDARD RS232 EQUIPMENT
- SUPPORTS ALL NEEDED PINS (2 thru 8, 12, 20, & 22)
- INCLUDES 3 FOOT CABLE AT NO EXTRA CHARGE
- BASIC TERMINAL ROUTINE INCLUDED
- RECOMMENDED BY COMMODORE & BROTHER
- EASY TO USE
- SUGGESTED LIST ONLY $49.95

**NEW FOR RS232 PRINTERS!!!**

The RS232 Printer Interface is an accessory which allows you to connect your RS232 Printer to the Commodore Serial Bus. Supports 300, 600, 1200, 2400 and more! This is the only interface available which gives you maximum software compatibility! Suggested list only **$79.95**

**See your local dealer or**
**CALL (206) 236-2983**
**DEALERS CALL US!**

**Omnitronix**
P.O. BOX 43-DEPT.R -MERCER IS., WA 98040

MOVING?
SUBSCRIPTION PROBLEM?

Get help with your subscription by calling our new toll free number:

**1-800-645-9559***
between 9 a.m. and 5 p.m. EST, Monday–Friday.

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment.

If moving, please give both your old address and new address.

* New York State residents call 1-800-732-9119.

# The RUNning Board

*RUN* invites you to contact its bulletin board (RUNning Board). In addition to up-to-date information about *RUN* and the Commodore industry, the RUNning Board now presents useful computing hints and tips, corrections and updates to published articles, user's group information, an up-to-date list of selections for ReRUN and sneak previews of upcoming articles.

The RUNning Board also features a menu format that makes it easier and faster for you to select a specific section of the bulletin board. We use a standard protocol, 300 baud, one stop-bit, no parity, full duplex and a word length of eight bits.

The RUNning Board is definitely worth a call. You can get on-line anytime, 24 hours a day, seven days a week, by dialing our new number: 603-924-9704.

*Listing 1 continued.*

```
271Ø REM ....POKE SCREEN CHARACT
     ER                    :REM*23Ø
272Ø P=983+X+Y*4Ø          :REM*4
273Ø V=PEEK(P+D):WL=W:W=PEEK(P)
                           :REM*19Ø
274Ø POKE P+D,L:POKE P,K:REM*196
275Ø FOR T=1 TO TL:NEXT T:RETURN
                           :REM*248
276Ø :                     :REM*186
277Ø REM ....CALC SCREEN DISPLAY
      VALUE                :REM*128
278Ø H=ASC(H$):IF H<64 THEN K=H:
     RETURN                :REM*18Ø
279Ø K=H-64:RETURN         :REM*174
28ØØ :                     :REM*226
295Ø FOR C=1 TO LEN(B$) :REM*149
296Ø PRINT "{CRSR LF}";MID$(B$,C
     ,1);A$;               :REM*197
297Ø GOSUB 275Ø:NEXT C:RETURN
                           :REM*21
3ØØØ :                     :REM*171
3ØØ2 REM FIXED DATA        :REM*1Ø7
3ØØ4 :                     :REM*175
3ØØ6 REM ....PLAYER INSTRUCTIONS
                           :REM*233
3ØØ8 DATA "{CTRL 1}HI, I'M ELMER
     .","{CTRL 3}I'M A TURTLE.",
     "{CTRL 2}LET'S PLAY A GAME.
     ...."                 :REM*151
3Ø1Ø DATA "ELMER IS A TINY TURTL
     E WHO CAN DRAW AND" :REM*73
3Ø12 DATA "{2 SPACEs}WRITE ALL O
     VER THE SCREEN IF YOU GIVE"
                           :REM*51
3Ø14 DATA "{3 SPACEs}HIM A LIST
     OF SIMPLE INSTRUCTIONS.{2 S
     PACEs}"               :REM*69
3Ø16 DATA "{39 SPACEs}"    :REM*3
3Ø18 DATA "FIRST, ENTER EITHER A
      LINE NUMBER ON{3 SPACEs}"
                           :REM*57
3Ø2Ø DATA "{2 SPACEs}THE LIST, O
     R 'NEW' TO ERASE THE WHOLE"
                           :REM*213
3Ø22 DATA "{3 SPACEs}LIST, OR 'E
     ' TO WATCH ELMER FOLLOW{2 S
     PACEs}"               :REM*51
3Ø24 DATA "{2 SPACEs}YOUR INSTRU
     CTIONS.{19 SPACEs}":REM*1Ø1
3Ø26 DATA "{39 SPACEs}"    :REM*13
3Ø28 DATA "IF YOU ENTERED A LIST
      LINE NUMBER, YOU{2 SPACEs}
     "                     :REM*1Ø7
3Ø3Ø DATA "{4 SPACEs}CAN THEN EN
     TER ONE OF THE INSTRUC- "
                           :REM*127
3Ø32 DATA "{3 SPACEs}TIONS SHOWN
      BELOW THE LIST.{9 SPACEs}"
                           :REM*223
3Ø33 DATA "{39 SPACEs}"    :REM*2Ø
3Ø34 DATA "YOU CAN ALSO DELETE O
     R INSERT LINES.{3 SPACEs}"
                           :REM*1Ø5
3Ø36 DATA "{39 SPACEs}"    :REM*23
3Ø37 DATA "{39 SPACEs}"    :REM*24
3Ø38 DATA "{4 SPACEs}PRESS ANY K
     EY TO START PLAYING...."
                           :REM*2Ø1
3Ø4Ø DATA END              :REM*143
311Ø :                     :REM*26
312Ø REM ....ELMER INSTRUCTIONS
                           :REM*2Ø
313Ø DATA RIGHT,1,UP,1,DOWN,1,LE
     FT,1                  :REM*218
314Ø DATA PEN UP,Ø,PEN DOWN,Ø,CH
     AR,2                  :REM*134
315Ø DATA COLOR,1,TEXT,3,STOP,Ø
                           :REM*8
316Ø DATA END              :REM*8
```

end R

**Manuscripts:** Contributions in the form of manuscripts with drawings and/or photographs are welcome and will be considered for possible publication. Article text and any accompanying programs should be submitted on disk as well as in hard-copy form. *RUN* assumes no responsibility for loss or damage to any material. Please enclose a self-addressed, stamped envelope with each submission. Unsolicited manuscripts that cannot be accepted will be returned only if accompanied by an appropriately sized, adequately stamped, self-addressed envelope. Payment for the use of any unsolicited material will be made upon acceptance. All contributions and editorial correspondence (typed and double-spaced, please) should be directed to *RUN* Editorial Offices, 80 Pine Street, Peterborough, NH 03458; telephone: 603-924-9471. **Advertising Inquiries** should be directed to Advertising Offices, CW Communications/Peterborough, Inc., Elm Street, Peterborough, NH 03458; telephone: 800-441-4403. **Subscription problems or address changes:** Call 1-800-645-9559 or write to *RUN*, Subscription Department, PO Box 954, Farmingdale, NY 11737. **Problems with advertisers:** Send a description of the problem and your current address to: *RUN*, Elm Street, Peterborough, NH 03458, ATTN.: Barbara Harris, Customer Service Manager, or call 1-800-441-4403.

*RUN* is a member of the CW Communications/Inc. group, the world's largest publisher of computer-related information. The group publishes over 50 computer publications in more than 20 major countries. Nine million people read one or more of the group's publications each month. Members of the group include: Argentina's *Computerworld/Argentina*; Asia's *Asian Computerworld*; Australia's *Computerworld Australia, Australian PC World* and *Macworld*; Brazil's *DataNews* and *PC Mundo*; China's *China Computerworld* and *China Computerworld Monthly*; Denmark's *Computerworld/Danmark, PC World* and *RUN* (Commodore); Finland's *Mikro*; France's *Le Monde Informatique, Golden* (Apple), *OPC* (IBM), *Theoreme* and *Distributique*; Germany's *Computerwoche, Infowelt, PC Welt, Computer Business* and *RUN*; Hungary's *Computerworld Informatika*; Italy's *Computerworld Italia* and *PC Magazine*; Japan's *Computerworld Japan*; Mexico's *Computerworld/Mexico*; The Netherland's *Computerworld Netherlands* and *PC World*; Norway's *Computerworld Norge* and *PC Mikrodata*; Spain's *Computerworld España, PC World* and *Commodore World*; Sweden's *ComputerSweden, Mikrodatorn* and *Svenska PC World*; Switzerland's *Computerworld Schweiz*; The United Kingdom's *Computer News, PC Business World* and *Computer Business*; Venezuela's *Computerworld Venezuela*; the U.S.'s *AmigaWorld, Computerworld, inCider, Infoworld, MacWorld, Micro Marketworld, PC World, RUN, 73 Magazine, 80 Micro; Focus Publications* and *On Communications*.

Circle 70 on Reader Service card.

# ARE YOU CAUGHT UP IN THE COPY PROTECTION ARMS RACE?

## DEFEND YOURSELF WITH KRACKER JAX
### A REVOLUTION IN ARCHIVAL SOFTWARE!

You know the routine by now: you buy an expensive nibbler and next month it's obsolete. How many times is your wallet going to be nibbled?

**Kracker Jax** is NOT a nibbler. It is a parameter copy system. Volume Two contains well over 100 separate copy parameters. What IS a parameter? Just a custom program that allows your 1541 or 1571 disk drive to strip all, and we mean ALL, copy protection from your expensive software, leaving you with UNPROTECTED, TOTALLY BROKEN back-ups that can be copied with even a simple fast copier.

This system has many advantages over the older nibbler type of utilities. For one thing, you don't have to experiment. Each parameter WILL back-up the title it was created for. Period. For another, a back-up created with **Kracker Jax** will NEVER rattle your disk drive head.

**KRACKER JAX**
**PROTECTION BUSTERS**

**BLAST DISK PROTECTION**

**ONLY $19.95 COMPLETE!**
No shipping or handling charges!
(C.O.D. please add $3.00)
Volume Two available NOW!
Volume One still available.
Dealer Inquiries Invited.

Check out some of these exclusive features:

- **Kracker Jax** is the BEST program of its kind!
- **Kracker Jax** will back up titles that the nibblers CAN'T!
- **Kracker Jax** requires NO special knowledge to operate!
- **Kracker Jax** strips protection in a matter of SECONDS!
- **Kracker Jax** is priced RIGHT—just $19.95 complete!
- **Kracker Jax** is UNPROTECTED—easy to back up!
- **Kracker Jax** updates are available QUARTERLY!

Remember, the minute a new program is released, the **Kracker Jax** team will be developing a new parameter for it. This means that future **Kracker Jax** disks will always contain parameters for the hottest new titles on the market! **Kracker Jax** is the system that cannot fall behind the times!

In the copy protection arms race, **Kracker Jax** is the ultimate defense!

**COMPUTER MART**

**CHECKS, MONEY ORDERS OR VISA/MASTERCARD ACCEPTED.**
Mail your order to: Computer Mart
2700 NE Andresen Road / Vancouver, WA 98661
Phone orders welcome: 206-695-1005
**SAME DAY SHIPPING!**

VISA
MasterCard

Circle 145 on Reader Service card.

*Finally...Bookkeeping Made Easy By...*

## *THE ACCOUNTANT*

*The ONLY Simplified Small Business Accounting System*
*Written EXCLUSIVELY For The Commodore 128*
**ONLY ONE PROGRAM & ONE DATA DISK DO IT ALL!**
*(Just think...no more swapping disks!!!)*

*FEATURES INCLUDE:*
- General Ledger
- General Journal
- Check Register
- Over 20 Reports Automatically
- Payroll Computation & Write-up
- Payroll Check Writing
- W-2 Printing
- Quarterly Report
- Accounts Receivable "Filing System"
- Customer Billings
- Accounts Payable "Filing System"

**ONE PRICE FOR EVERYTHING**
**$149.95**

*Integrated Packages Coming Soon!*
*Sales & Inventory Control/Construction Accounting*
*Professional Client Billing/Restaurant Accounting*

**SEND $149.95 TO:**
**KFS** Software, Inc.
1301 Seminole Blvd. #153A
Largo, Florida 33540

For C.O.D. Orders Phone:
**(813) 584-2355**
(FL Residents add 5% Sales Tax)

Circle 172 on Reader Service card.

NEW

**for the Commodore 128**
DON'T GIVE UP YET!

**BACK UP**
**virtually all 64/128 Software with**
**NEW 1571 Clone**

Months of R&D have gone into the GCR CLONE MACHINE™ for 1571. Now you have the ability to reproduce GCR signals to back up virtually all software for the 64/128 including CPM (double sided too!). Included are:
1) Full Density Utility 2) GCR Copy 3) Directory Utilities 4) Auto Boot Maker (64&128 Modes) 5) Expansion module section (for future updates).
ALL THIS for only $49.95

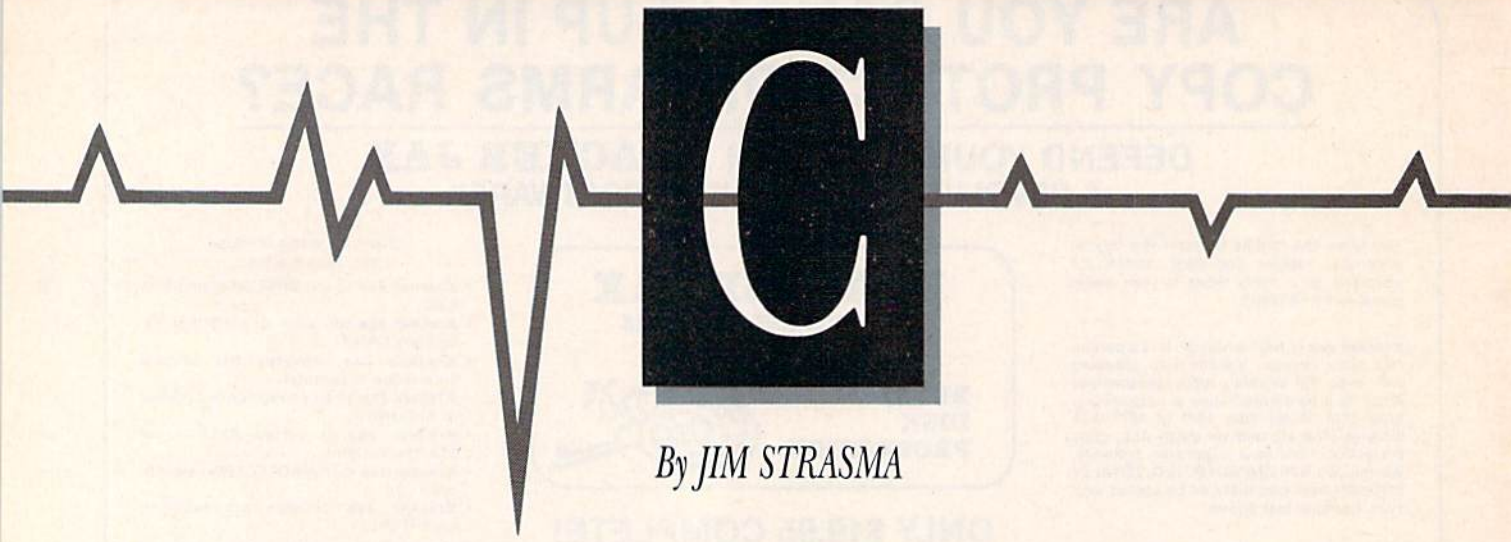
**PRINTER INTERFACE**

The MW-350 interface has been revised to fully support the 128 including complete CPM emulation total graphics, correct aspect ratios, print buffer, etc. Insist on compatability for only $79.00

**MIDI APPLICATIONS**

Synthesizers, Interfaces, Music Disks, Sequencer Software, Etc.

**CALL - 201 - 838-9027**
**or write us at**
**Micro-W. DISTRIBUTING, INC**
1342B Route 23 Butler, NJ 07405
(requires 128 with 1571 drive)
MasterCard VISA



By JIM STRASMA

*Do you have a problem or question about your Commodore computer? Commodore Clinic can help. Just send your question on a* postcard *to:*

*Jim Strasma*
*Commodore Clinic*
*PO Box 6100*
*Macomb, IL 61455-6100*

*Queries are answered only through this column and, due to the volume of mail, only questions likely to appeal to the majority of our readers can be published.*

## HARDWARE

***Q:** Can Electronic Arts' Amiga program, Deluxe Paint, be used on the C-128 with a memory expansion module?*

***T. Phillips***
***Whiterock, BC***
***Canada***

**A:** No, because the Amiga uses a machine language different from the two machine languages used in the C-128. It also has support chips different from those in the C-128. Choose a paint program from among the dozens of good ones available for the C-64.

***Q:** I have a C-64 with a cassette player and an SX-64 with a built-in disk drive and no tape port. Is there a way I can connect my SX-64 to my C-64 to transfer my tape programs to the SX-64 disk drive?*

***Jeff Hickman***
***Page, AZ***

**A:** If you can buy or borrow a 6-pin male-to-male DIN cable (i.e., a Commodore serial bus disk drive or printer cable), you're in business.

Simply hook up the cable to the serial bus connector on both computers, and then use the SX-64's disk drive from the C-64. It will behave as if it were a 1541 hooked directly to the C-64 along with the tape unit. Then simply alternate loading from cassette and saving to disk from the C-64, as follows:

```
LOAD"name"
SAVE"0:name",8
```

***Q:** I bought a VIC-20 last year, and I am a total novice when it comes to computers. I don't want to write programs, so where can I buy software for the VIC?*

*Also, along with the VIC I bought a 1541 disk drive. Are they compatible?*

***Russ Hiner***
***Stone Mountain, GA***

**A:** Toys R Us is one well-known chain that still stocks a good selection of programs for the VIC-20; I'd be glad to hear of others.

As for the 1541, yes, you can use it with the VIC. The hookup and commands are the same for both the VIC and the C-64. If you find the instructions in the manual too difficult, ask a nearby Commodore user group for help. One near you is the Atlanta group, c/o Ronald Lisoski, 1767 Big Valley Lane, in Stone Mountain.

## SOFTWARE

***Q:** I bought Paperback Writer for my C-128. The first problem is that it doesn't justify when my printer is set to proportional spacing. Justification is seen on screen, but not in print.*

*Second, I have a Spanish proportional-spacing daisywheel printer, the Madeline PS, from Adler.*

*My word processor has a printer file, which I have adapted to get the special Spanish characters. However, I haven't been able to get all of them at once. If the printer DIP switches 4–6 are set to Spanish, I get all but three characters. If the switches are set to USA, I get those characters, but not two others. Can you help?*

***Jose Alvarez***
***Rocheport, MO***

**A:** Most printers have escape codes that can override their switch settings. These are of the form

```
PRINT#4,CHR$(27);CHR$(126);
```

where 126 is the command value you need. The codes can usually be made part of the printer-definition file used by your word processor. Other word processors, such as Easy Script, allow you to hide the needed codes within the text you're writing.

Whichever way you do it, you need an escape sequence that changes character sets from USA to Spanish and back. You can then use the command each time you print a character from the alternate character set, and change sets back again for the next character from the regular set. If your printer can do this, the result will be slow, but workable.

As for true proportional spacing, that requires intimate knowledge of the printer by the word processor. Unless the proportional spacing in Paperback Writer is specifically designed to work with your exact printer model, it will need changes to the printer-definition file—probably lots of them. Those who really need proportional

spacing usually end up buying whatever printer fits the word processor, or whatever word processor fits the printer (if they can find one).

*Q: I recently acquired a C-16 and would like to set it up as a typewriter. The computer's instruction manual says it can be done, but is vague about the equipment required and how to hook it up. Whenever I ask a service center or computer "expert", I get the same answer: "Forget it. The 16 is just a toy." Can something be rigged up to print one page at a time without saving it to disk?*

***Larry Davidson***
***Metairie, LA***

**A:** The C-16 is intended to use the same software cartridges as the Plus/4. Therefore, I think you'll find Commodore's Script/Plus word processing cartridge for the Plus/4 will do what you want. You can order Script/Plus and enough other C-16 programs directly from Commodore to make it a visibly useful computer.

You'll also need a printer to copy your page to paper. Since some non-Commodore printer interfaces do not work with the Plus/4, your best bet may be to buy a Commodore printer, such as the DPS-1101.

*Q: I recently got Epyx's Fast Load cartridge for my C-64. A friend has one, also. When I tried mine, I got a lot of garbage. When we used his, it was fine. What's wrong?*

***Jared Shockley***
***Renton, WA***

**A:** Assuming you used the same C-64 system both times, your Fast Load cartridge is probably defective. This sometimes happens with all products. If possible, take it back to the dealer and swap it for another.

On the other hand, if you didn't use the same C-64 both times, do that first, because it's also possible that there is something wrong with your computer itself instead of the cartridge.

## PROGRAMMING

*Q: When a program I purchased happened to have the same ID as one of my own programs, I ended up with two disks having the same ID. This could cause a conflict when using* RUN*'s Disk Master program ("Disk Master Revisited,"* RUN*, February 1984). Please give me detailed instructions on how I may change the ID of my own disk, so as not to have a conflict.*

***Maurice F. Hamblett***
***Venice, FL***

**A:** The only safe way is by formatting a new disk with the ID you want, and then copying to it all files from the original disk. Any other approach is risky at best. Since copying with a single drive is tedious and not always even possible, your best bet will be to find someone with an MSD dual disk drive or a Commodore 4040 dual disk drive. Then place your original disk in drive 0 and the newly formatted disk in drive 1.

The command to make the copy is:

```
OPEN 15,8,15,"C1 = 0"
```

After the copy is completed, you may use the new disk in place of your original.

*Q: I own a C-128, but most programs published in magazines seem to be written for the C-64. Please tell me how to convert a program for the C-64 into 128 mode.*

***P. Leyden***
***Denver, CO***

**A:** The principle for converting C-64 programs into C-128 native mode is the same as for converting them to work on the Plus/4, namely, replace each Poke command with an equivalent added Basic command. To do this, you'll need both your C-128 manual of new commands and a book detailing what all the usual Pokes do on the C-64. For this, I refer to Sheldon Leemon's book, *Mapping the C-64*.

Then, when you have, for example, a POKE 53280,14, you can use the two books to find the equivalent C-128 command, COLOR 4,15.

*Q: In many programs, I notice the number 169 appearing frequently in Data statements. Is this a Gosub in machine language? I'm curious to know the basics of machine language contained in Data statements.*

***Jim Smith***
***Sterling, KS***

**A:** The number 169 is the decimal representation of the machine language command LDA #. It loads the value in the number following 169 into the primary accumulator of the microprocessor. This is indeed a very common command, and often you will find the next number is 0, meaning that the accumulator contains a zero.

If you're ready to learn more about machine language, one tool I use almost daily is Micro Logic's 6502 reference card. It lists on a single plastic sheet all the reference material I need for 65xx programming, including the answer to your question about what instructions are represented by various numbers. To order, send a check for $6.95, marked "Send (1) MC-6502," to PO Box 174, Hackensack, NJ 07602.

*Q: I know nothing about machine language, but, for program security, I'd like to be able to erase a program when it ends or if a system reset is detected. I can't just use New, because some utility programs will resurrect the program afterwards. Could you write a machine language program to do the following:*

```
10 FOR X = 2048 TO 32767
20 POKE X,0
30 NEXT
```

*and to be executed when called, or on reset?*

***Glenn Parks***
***Washington, NJ***

**A:** I could, but I won't, because it would give you a false sense of security and breach my long-standing ban on helping either protectionists or pirates.

You should be aware, however, that anyone who wants access to your program badly enough to use an un-new utility could also attack it with more powerful utilities, some of which, for example, freeze your program at the press of a button, save it to disk, and then resume, all without being detected by your program.

## REPAIRS

*Q: When I hit the A key, I must apply a sharp tap for it to register. I substituted the keyboard from my VIC-20 and the problem disappeared. Is this a legitimate repair?*

***John Bagge***
***Oakland, NJ***

**A:** It is, indeed. Commodore was even accused of shipping some C-64's with VIC keyboards, back when parts were hard to come by. But hang on to your C-64 keyboard. You may want to use the individual keys from it for later repairs. It disassembles with a small Phillips screwdriver, and inside you'll find all the inner mechanisms the same, with only the removable keytops differing from key to key. This means you can swap individual keys next time, instead of the whole keyboard.

## OTHER

*Q: I live in an area with no user groups nearby. What should I do to bring one to Riverdale?*

***Richard Tieger***
***452 W. 261st St.***
***Bronx, NY 10471***

**A:** You've already taken the first step by announcing your interest in forming one. Now other *RUN* readers in your area can contact you about it.

Here are some more suggestions: Choose a convenient time for a first meeting in your home. Then make signs announcing it as an organizational meeting and briefly describe what your user group will do. Ask the Commodore dealers in your area to post copies of your announcement and to mention it to customers, and also send copies to local papers, radio and TV stations. Then, on the appointed night, have some extra chairs and your computer in your living room and some refreshments ready. You also might have an interesting program handy to show, or a disk of public domain programs to give away. [Note: Also see, "How to Begin and Maintain a User's Group," *RUN*, February 1985. Eds.]

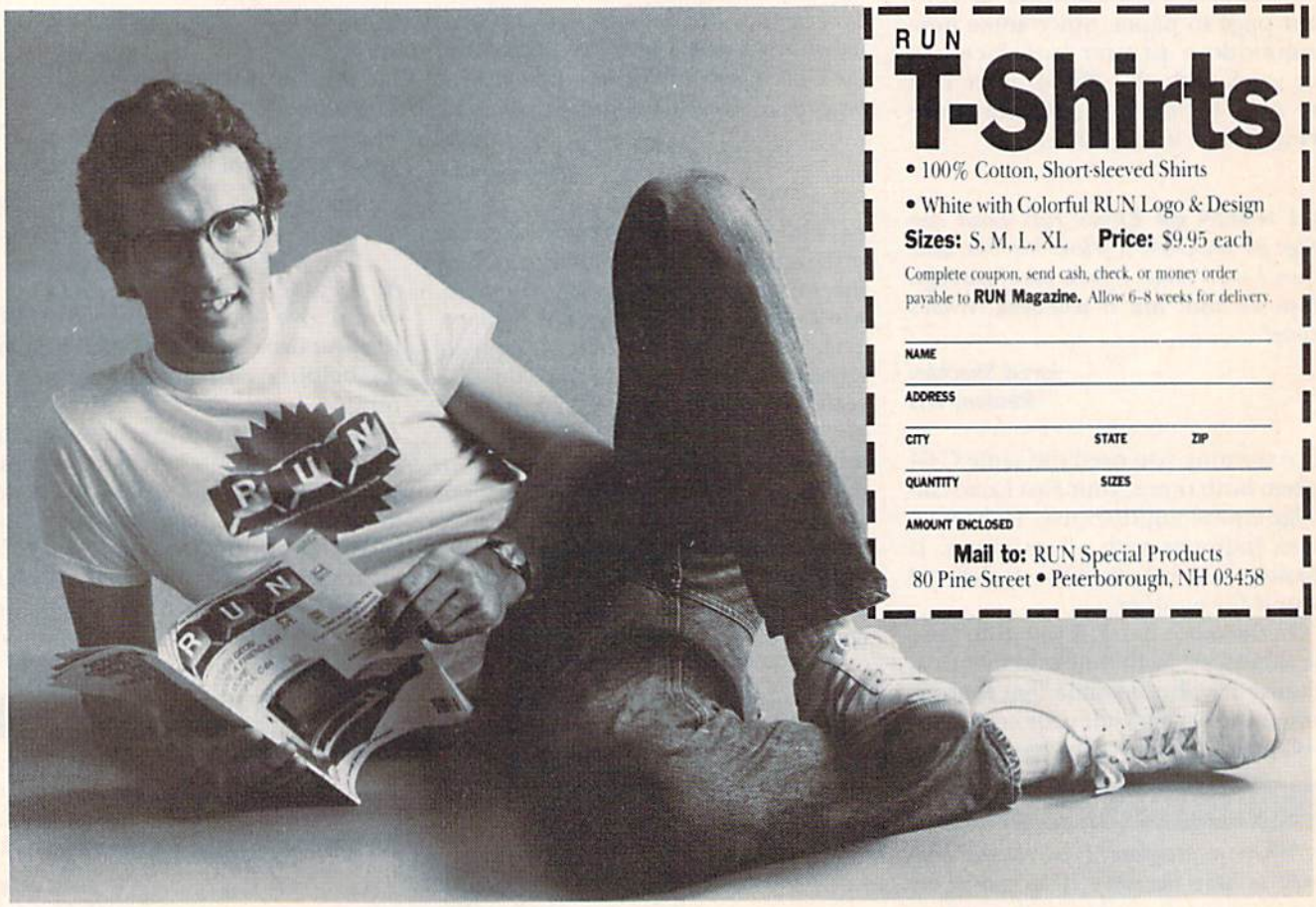
What happens from that point on is up to the members of your group, but some of the best-known and largest user groups started in just this way.

*Q: I have a list of Plus/4 software Commodore gave me, and would be happy to share it. I'm also interested in belonging to or starting a Plus/4 owners club. Could you assist me in this?*

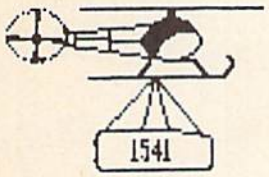
***R. N. Mitchell***
***317 Bahia Circle***
***Ocala, FL 32672***

**A:** I'd be glad to. Plus/4 owners interested in forming a user group should let reader Mitchell know, and offer whatever help you are willing to provide the group.

With Plus/4s currently selling for under $80 from C.O.M.B., there soon should be plenty of new owners interested in the group. R


RUN
T-Shirts
• 100% Cotton, Short-sleeved Shirts
• White with Colorful RUN Logo & Design
Sizes: S, M, L, XL Price: $9.95 each
Complete coupon, send cash, check, or money order payable to RUN Magazine. Allow 6–8 weeks for delivery.
NAME
ADDRESS
CITY STATE ZIP
QUANTITY SIZES
AMOUNT ENCLOSED
Mail to: RUN Special Products
80 Pine Street • Peterborough, NH 03458

# 1541 M.A.S.H.




Now you can service your own disk drive with the popular program 1541 MASH. You can check and adjust the head alignment; Check and adjust the RPM's. You can also use MASH to clean your drive and check disks for errors. Complete instructions guide you step by step as you rate your drive's performance and make the necessary adjustments. All you need is a screwdriver and about an hour of your time. No knowledge of electronics is necessary. This is the easiest program of its type to use.

***Only $19.95***

## Service Your Disk Drive!

## Custom Drives

You can customize your 1541 drive giving you added convenience. This booklet will show you how to move the power switch to the front of the drive; install a write protect switch (allowing you to write on the back of a disk without punching holes or removing any tapes); Install a device number switch (a must if you have two drives.) Easy step by step instructions include complete diagrams making the procedure a snap. Complete kit includes switches, wires, connectors.

Booklet - ***Only $4.95***
Complete Kit - ***$24.95***

## Reset Switch

A Permanent, Case Mounted reset switch that you can easily install by following our step by step instructions. An attractive and handy addition to your Commodore 64.

***Only $9.95***

## Disk Tracker

Use Disk Tracker to catalog all of your disks into a neat filing system. Read and Edit each disk directory. Sort each directory and print disk jacket labels or a long master list of your programs. Display any directory at will. Search function finds lost programs quickly. Get your wares organized.

***Only $19.95***

## Check Tracker

Check Tracker is the fast acting versatile banking program that you have been waiting for to handle all your banking transactions. Handles checking and savings account at the same time with transfers and money machine functions. Each account can be divided into Business/Home/or Husband/Wife. Each item can be coded for automatic budgeting or automatic double entry bookkeeping with "T" accounts. Justifies the account; One or two drives; Automatic backup; Menu Driven... easy to use. Works great for simple home use or complicated business applications.

***Only $24.95***

## Variety Pac #1

A variety of spelling and math games all on one disk - Only $9.95

## Variety Pac #2

A variety of excellent BASIC games all on one disk -Only $9.95

## Adventure Pac

Forest Adventure, Desert Adventure, Miser's House, Haunted House, and more... all on one disk.

***Only $9.95***

## Utility Pac

Here is an assortment of the best disk utilities with complete instruction. Handy tools for the programmer or for the casual user. - Only $14.95

## Hot Tips

A disk full of Hot Programming tips, secrets, and useful sub-routines with documentation.

***Only $14.95***

## Address Tracker

Dedicated filing system designed specifically for names and addresses. Prints labels. Sorts on all fields. Works with Speedscript Utilizer to Merge labels and word processed text. Super-Easy to Use. A powerful addition to your software library.

***Only $19.95***

## Songs for Kids

25 Delightful, traditional childrens songs with words and 3 voice music. Everything from Hickory Dickory Doc to Farmer in the Dell. Ages 3-7.

***Only $14.95***

## Great Hymns

25 terrific hymns with words and music in 3 part harmony.

***Only $14.95***

## Bible Trivia

Bible Trivia is one of the finest trivia games available. 1000 questions, 1-10 players, exciting board game, question editor for making your own question files. You can even use it to make quizzes for your kids.

***Only $24.95***

## Speed-Script Utilizer

The Utilizer works along with your copy of the popular word processor, Speedscript. The Utilizer allows you to print multiple copies of your documents unattended. You can also merge a mailing list or other data file with your speedscript text so that multiple copies are printed changing names etc. on every copy. The powerful sort routine can be used to sort any Speedscript file into useful order. This program will work with any word processor that has sequential file options.

***Only $19.95***

## PS Graphic Pac #1

Here is a disk full of Original Graphics complatible with the popular Print Shop program. A real plus for your graphics library.

***Only $14.95***

## Sound Tracks

A disk full of interupt driven, continual playing, sound tracks. Music and effects that you can use in your own programs. - Only $19.95

## Computer Furniture

Custom Computer Center designs that you can build from one or two sheets of plywood. Booklet includes scale patterns, material lists, procedures, and professional finishing tips. Attractive and easy to build - Only $3.95

# CHIPMUNK SOFTWARE

**Box 463**
**631 N. Cherry**
**Battle Ground, Wa. 98604**

**1-800-331-3428**

CALL

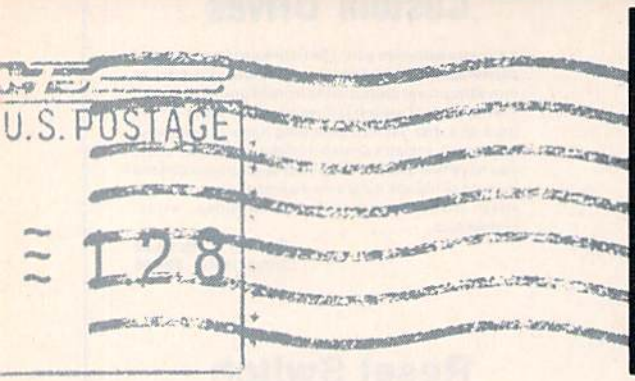
# D S / D D Disks 99¢

High Quality, Guaranteed, DS/DD, disks with tvyek sleaves, tapes, labels, and boxes - Only 99¢ each

**No Shipping Charges**

Add $2.00 for COD or Foreign Delivery.

**To Order Call - 1-800-331-3428**
**In Washington 1-687-2343**




### User's Group by Mail?

I am a fairly new computer user and would like to learn more. *RUN* provides fine articles, but I believe a user's group would help me more, since I would be dealing with other new users like myself. However, I don't have time for the weekly club meetings in my area.

I would like to hear from others interested in starting a mail-in club for C-64 users, or anyone who already has such a club.

**John Eidschun**
**2746 Beacon Drive**
**Atlanta, GA 30360**

### Correspond with the Philippines

We're a group of Commodore users in the Philippines who would like to exchange notes with other clubs. Our address is: Society of Commodore Users of Metro Manila, c/o Chin Wong, 29A Scout Lozano, Quezon City, Philippines.

**Chin Wong**
**Quezon City, Philippines**

### RUN Script Hints

I'm absolutely delighted with RUN Script 64. I especially like being able to move among screen codes, Commodore ASCII and true ASCII.

Because the RUN Script 64 system uses a Basic loader, it's easy to lock the printer into true ASCII in the loader. For the Cardco CARD? + G, I just added the line:

```
10 OPEN 4,4,25:PRINT# 4,"LOCK":PRINT#
   4:CLOSE 4
```

Another feature you didn't mention is that headers can be suppressed on the first page simply by putting the .hd statement elsewhere than at the beginning of the file.

Thanks for a very useful program. It has solved some printing problems, including interface "quote mode" complexities and printing of files downloaded from local bulletin boards.

**Marjorie S. Hildebrandt**
**Simsbury, CT**

### Printing in Spanish

If you're using a Commodore 64 or 128 computer, a Commodore 1101 Daisywheel printer and the Paperback Writer 64 or 128 word processor, and you're trying to write in Spanish with Adler Spanish daisywheels, I'll bet you're having trouble.

The printer file for the 1101 that comes with Paperback Writer is not functional. It's adapted to write in French, so to write Spanish you have to adapt it yourself. It takes hard work and a lot of patience, but you can do it, and these pointers will give you some help. The basic steps are:

1. Load from disk the file named 1101/JUKI6000.pf.
2. First change the n to y in the line for the ASCII (the first one), and also put a 7 in the line for the address code.
3. Look for the printer codes in your 1101 printer's manual, and put the codes for the Spanish characters in your printer file.
4. Change the French symbols to Spanish symbols in the dot squares (at the end of the file).

Here's where you get into trouble. Most of the printer codes for the Adler Spanish wheels are wrong. All the combinations that include 7 on that page don't give you any character at all. Setting the DIP switches to USA or Spain won't do any good. Neither will writing to the publishers of Paperback Writer. They won't answer you, or maybe they don't know an answer.

After months of hard work, I finally found all the codes you need to write completely in Spanish, including all the Spanish symbols. With my chart of codes you don't even need to set the DIP switches to Spain. (In fact, in Spain DIP the accent doesn't work properly when writing in proportional spacing, but in USA DIP it works perfectly.)

If any readers would like the codes for the Spanish symbols, I'll send a copy of my chart for $5. For $7 I'll send a hard copy of the complete printer file with all the codes and Spanish symbols. With this you can both write in Spanish and see the Spanish characters on the screen. Finally, for $10 I'll send a disk with everything on it.

If you have an old version of Paperback Writer, you can adapt your printer file with the code chart, but if your version is the latest, your printer file doesn't have the French symbols to adapt to Spanish. In that case, you'll definitely need either the hard copy of the file or the disk.

By the way, with the Adler Spanish daisywheels you can also print in French, and I can give you the codes for the French characters in USA DIP.

**José A. Alvarez**
**Box 7593, Sunny Isle**
**St. Croix, Virgin Islands**

Circle 74 on Reader Service card.

PROF JONES
SUMMER/FALL 1986

ORDER LINE
(208) 342-6939

THOROUGHBRED
GREYHOUND
TROTTER
LOTTERY/LOTTO
FOOTBALL
BASKETBALL

OFFICE HOURS
M-F 8 AM - 5 PM
SAT 9 AM - 1 PM
(Mountain Standard Time)

FREE CATALOG

1940 W. STATE
BOISE, IDAHO 83702

VISA
AMEX

## PROFESSIONAL HANDICAPPING SYSTEMS

**Professor Picks Football™**
$99.95; with win/loss power ratings $149.95; Professional Series™ $199.95

**Expanded Lottery/Lotto Analysis**
Lottery: 3-4 digits $79.95; Lotto: max. of 99 digits $99.95; Enhanced Lottery/ Lotto $129.95

**PC-3 Portable Computer** (4k)
Choice of Thoroughbred/Greyhound/Trotter Gold Edition™ software. $249.95

**Model 100 Portable Computer** (32k)
Choice of Thoroughbred/Greyhound/Trotter Gold Edition™ software with Master Bettor™ $649.95

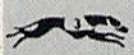
PROFESSIONAL SERIES

**PROFESSIONAL SERIES™** (Tho/Grey/Trot)
The all new Professional Series™ represents the most advanced handicapping software available.

**Analysis Module™**
Complete bet analysis highlights this basic Professional Series™ module. Full 50 tracks/kennels/etc. $249.95

**Factor Value/Multiple Regression Module™**
Factor Value Weighting highlights this addition module™ $149.95

**Data Base Manager Module™**
Automatic storage of last 11 races highlights this module. ($99.95 with Factor Value Module) $149.95



**GOLD EDITION™** (Tho/Grey/Trot)
The classic Gold Edition™ from Prof. Jones offers flexibility, results, and ease of use.

| | |
|---|---|
| Gold Edition™ | $159.95 |
| Enhanced Gold Edition™ | $199.95 |
| Limited Gold Edition™ | $299.95 |
| Ultra Edition™ | $399.95 |

**Handicapper's Bulletin Board now available**
**VHS Training Tapes now available**

**Terms:** Free shipping all software. Add $6.00 COD / $6.00 UPS Blue / $9.00 Out-of-country / ID residents add 5% / 3 weeks personal checks / cash price only add 2% Visa, MC, AMEX. Prices subject to change.

Circle 193 on Reader Service card.

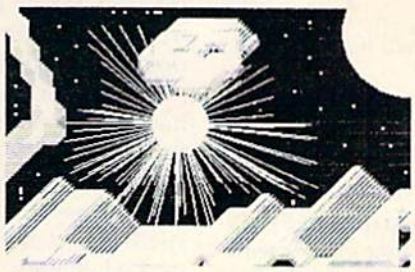
Store up to 7,000 records
Select and print specific records
Merge with word processor for forms and letters.
Easily print mailing labels and reports
Sort on up to 5 fields quickly, alpha takes one second!
Restructure file without retyping data
Batch entry for large quantity of data in short time
Print data in upper and lower case
10 mathematical functions

# FLEX FILE 128

*FULLY UTILIZES THE POWER OF THE 128!*

Cardinal Software
14840 Build America Dr.,
Woodbridge, VA 22191
Info: (703) 491-6494
*800 762-5645*

Circle 181 on Reader Service card.



NEW!

FOR THE C-128!

*PRESENTING . . . A NEW GRAPHIC-ART DISCOVERY FOR THE C-128 COMPUTER!*

# 3-D CANVAS

Features NEVER-BEFORE POSSIBLE! Throw away "wire-frame" 3-D Progs. Now! DRAW TRUE 3-D IMAGES AS EASY AS MOVING A JOYSTICK—IN ANY SIZE, EVEN DRAW IN TRANSPARENT 3-D!
**2-D DRAWING, TOO, IN ANY BRUSH SIZE**
CHANGE Colors, ANGLES, Size at TOUCH OF A KEY! CREATE Complex 3D Screens in seconds and SAVE them on DISK or DUMP A HARD-COPY TO PRINTER! PRINT TEXT anywhere on Screen in 16 Colors! Make CIRCLES, SPHERES, POLYGONS, BOXES, Etc.— FILL with COLORS or PATTERNS! DUPLICATE, STRETCH, TRANSFER, INVERT or EVEN ANIMATE ANY block of DRAWING! ADD SPRITE ANIMATION for LIVING DRAWINGS!

**ALL THIS & MORE AT LOW INTROD. PRICE:**
**only $49.95 U.S. (Ca. Res. Add 6%)**
**Plus Special: All orders received by 11/15/86 get a FREE C-128 Util. Disk of GAMES, etc.**

**CAPP/CO, P.O. Box 7652**
**Chula Vista, CALIF. 92012-7652**
**Tel.: (619) 477-5970**

OTHER C-128 PROGS. AVAILABLE:
FANTASTIC GALAXY—FAST-ACTION ARCADE GAME IN NEW DIMENSION! **$24.95**
C-128 UTILITY DISK—GAMES, DEMOS, USEFUL UTILS. FOR THE 128! **$14.95**

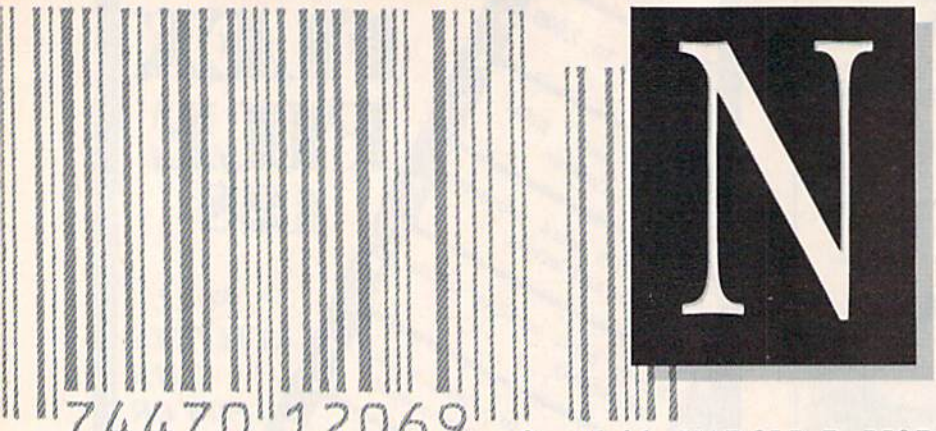
# *Attention Subscribers*

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

CW Communications/Peterborough
RUN
PO Box 954
Farmingdale, NY 11737

Please delete my name from mailing lists sent to other companies or organizations. RUN

Name _____
Address _____
City _____ State _____ Zip _____




*Compiled by HAROLD R. BJORNSEN*

*These new products were introduced by their manufacturers at the June Consumer Electronics Show in Chicago.*

### Right Hand Helper

Sharedata (Eden Prairie, MN 55344), introduces Z-Glove, a glove you wear that senses most common hand movements. Used in place of cursor keys and input devices, you handle objects on the screen in much the same way you would real objects. Grasp, Z-Glove's programming language, lets you change the workings of a program while it is running. Available for $39.95.

Check Reader Service number 400.

### Money

Timeworks (444 Lake Cook Road, Deerfield, IL 60015) expands its Sylvia Porter's Personal Finance Series with Your Personal Investment Manager for the C-128, which manages investment transactions, monitors your investment taxes and tracks your portfolios and retirement investments. Fundamental and technical analyzers help you evaluate securities. You can also access databases such as Dow Jones News, CompuServe, The Source and Warner's Investment Strategies. Available on disk for $69.95.

Check Reader Service number 401.

### Games and More Games

Eleven new games on disks for the C-64 have been announced by Electronic Arts (1820 Gateway Drive, San Mateo, CA 94404).

Solve a murder and learn your true identity in Amnesia ($39.95). Battle to the death in freeway firefights in Autoduel ($49.95). Take command in the World War II game, Battlefront ($39.95). View your chessboard in two or three dimensions with Chessmaster 2000 ($39.95). Explore the Oriental world of magic and mysticism in Moebius ($39.95). Help a cybernetic tank crush armored defenders in Ogre ($39.95). Tune in, turn on and boot up in Timothy Leary's Mind Mirror, a mind game for blowouts ($32.95). Romp through 100 levels of treacherous dungeon playfields in Ultimate Wizard ($29.95).

The prices for the following games had not been determined at press time, but they will range between $30 and $50 each. Wend your way through seven cities, with new magic spells and a new class of characters, in Arch-Mage's Tale. Host your own murder party in Murder Party, with different suspects and clues each time you play. Use robots to hunt for bizarre items in Scavenger Hunt, a part computer and part board game.

Check Reader Service number 405.

### Broderbund C-64 Trio

Broderbund Software (17 Paul Drive, San Rafael, CA 94903) introduces three programs on disks for the C-64.

Design working mechanical models and toys, customize the designs and print them out with The Toy Shop. Wire, wooden dowels, adhesive cardboard and users manual are included. $59.95.

Type! teaches typing with text and sentences and includes an arcade-style game. $49.95.

Breakers is a science-fiction text adventure in a futuristic real-time world where the action continues even without your input. $39.95.

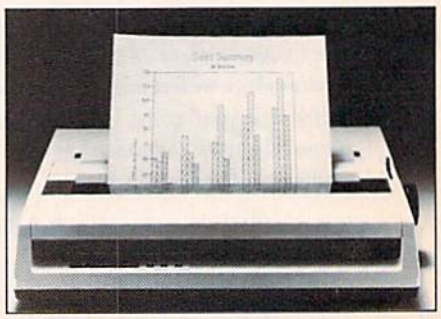
Check Reader Service number 402.

### NLQ & Color Printers

Okidata (532 Fellowship Road, Mt. Laurel, NJ 08054) now offers its model 120 dot-matrix printer ($269) with near-letter-quality capabilities. The 120 has a mean-time-between-failure rating of 4000 hours.

The Okimate 20 color printer ($169) creates hi-res pictures, graphics and overheads and requires the Plug 'N Print kit ($99), which includes an interface, data cable, cartridge ribbons, computer paper and instructions.

Check Reader Service number 403.



*The Okimate 120.*

### Stickers

Stickers, a graphics program for children of 4–12, creates "sticker" pictures while improving problem-solving skills. Available on disk for the C-64 for $34.95. Springboard Soft-

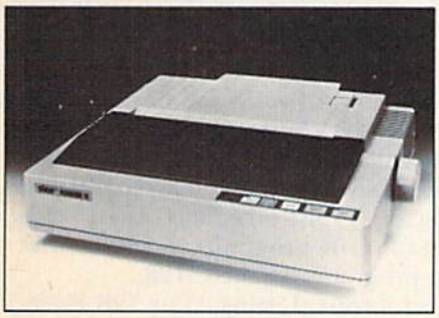
ware, Inc., 7807 Creekridge Circle, Minneapolis, MN 55435.

Check Reader Service number 406.

### Death from Above

In the arcade game A.C.E.: Air Combat Emulator, a talking on-board computer warns you of incoming enemy missiles and aircraft as you guide your supersonic fighter to wipe out enemy air and ground forces and ships. Available on disk for the C-64 at $19.95 from UXB, 1 Kendall Square, Cambridge, MA 02139.

Check Reader Service number 407.



*Star's Gemini II printer.*

### Gemini II

Star Micronics (200 Park Avenue, Suite 3510, New York, NY 10166) introduces the Gemini II, a C-64- and 128-compatible dot-matrix printer that prints 120 cps in draft mode and 30 cps in near-letter-quality mode. A snap-in ribbon cartridge and interface cable are included. Available for $329.

Check Reader Service number 404.

### Fisher-Price Education

Fisher-Price Learning Software (PO Box 1327, Cambridge, MA 02238) introduces four C-64 educational programs based on children's classics, each available on disk for $24.95.

In Peter Rabbit Reading (for ages 3–6), children develop early reading skills as they help Peter Rabbit find his way through gardens, ponds and other places. Prokofiev's Peter and the Wolf Music (ages 3–7) helps children develop primary music and listening skills using characters and themes from the classic music adventure. The First Men on the Moon Math (ages 9–12) helps children to add, subtract, multiply and divide within equations. In Jungle Book Reading (ages 7–12), children test and improve their reading comprehension skills as they explore the wild with Mowgli, the jungle boy.

Check Reader Service number 408.

### Tool Box

The Personal Choice Collection from Activision (2350 Bayshore Frontage Road, Mountain View, CA 94043) is a series of productivity tools on disks for the C-64.

Writer's Choice, a word processor, includes a 50,000-word spelling checker and layout-preview option that lets you see how a document will appear on hard copy. Filer's Choice, a filing and record-keeping system, lets you customize computer index cards and combine information from multiple fields into one file for reports. Planner's Choice, a personal planning and spreadsheet system, lets you select column widths and view different sections of the spreadsheet simultaneously.

Each program may be purchased separately for $39.95 or in a set for $99.95 complete.

Check Reader Service number 410.

### Create Garfield Cartoons

Create cartoons featuring Garfield and his friends with Create with Garfield!, a graphics program for the C-64. Children make cartoons by selecting backgrounds and characters (Jon, Odie, Arlene, Pooky, Nermal and Garfield), setting up situations, adding built-in captions (or writing their own), and then printing out their creations as posters, cartoons or labels. Available on disk for $29.95 from DLM, One DLM Park, PO Box 4000, Allen, TX 75002.

Check Reader Service number 411.

### Firebird Games

Firebird (PO Box 49, Ramsey, NJ 07446) offers two new games on disks for the C-64. Tracker has you overcoming a complex web of defenses in order to terminate the renegade artificial intelligence residing within ($34.95). Starglider is a combat simulation, with animated, 3-D vector graphics. Your mission: Destroy the space fleet of an invading planet (no price set at press time).

Check Reader Service number 412.

### Survival Conference

The Association for Women in Computing (AWC) announces its Fifth Annual Conference, which will be held September 26–28, 1986, at the Embassy Suites Hotel, Laclede's Landing, St. Louis, MO. The theme of the conference is "Today's Woman: Computer Literacy for Survival."

For more information, contact AWCC'86 Conference Information, 407 Hillmoor Drive, Silver Spring, MD 20901.

## RUN AMOK

*Item*: There is a bug in the *Digit Fidget* program (May 1986, p. 70). Numbers are not rounded properly when the rounding would cause the integer portion of the number to change. For example, if you format 2.9999 with the mask "#.##", the result is "2.00", while it should be "3.00". The following modifications should fix the problem. Change line 50120 to:

```
50120 PT=PX-INT(PX):PT=PT*10↑PC+.5:IFPT>=10↑PCTHEN PZ=1:PT$="":
      GOTO50170
```

Add the following lines:

```
50122 PT$=MID$(STR$(INT(PT)),2)
50170 IFPZ<=LEN(PR$) THENIFMID$(PR$,PZ,1)="."THEN PZ=PZ-1:GOTO50200
50180 IFPZ=LEN(PR$) THENPZ=0:GOTO50200
50190 PZ=PZ+1:GOTO50170
50200 IFPZ=0THENPE=-1:RETURN
50210 PY=VAL(MID$(PR$,PZ,1)):IFPY=9THEN50230
50220 PR$=LEFT$(PR$,PZ-1)+MID$(STR$(PY+1),2)+MID$(PR$,PZ+1):GOTO50125
50230 PR$=LEFT$(PR$,PZ-1)+"0"+MID$(PR$,PZ+1):PZ=PZ-1:GOTO50200
```

# Learn to Walk Before You RUN

We receive many letters from new Commodore owners who want to learn the first steps in using their computers. For these first-time users, we present the following step-by-step list of things that all beginners should be aware of as they start typing in programs.

1. Before you can use a fresh disk, you have to format it. First turn on your disk drive, then insert the disk, close the latch and type:

```
OPEN15,8,15 <Press Return>
PRINT#15,"N0:NAME,##" <Press Return>
```

The ## is a two-character identification number that can be any combination of letters and/or digits. "NAME" can be any title for your disk that you choose, but it must not exceed 16 characters. Wait for a few minutes while the disk spins inside the drive, being formatted. When the disk stops spinning, type:

```
CLOSE15 <Press Return>
```

C-128 owners can shorten this procedure by simply typing:

```
HEADER "NAME,##" <Press Return>
```

Caution: The formatting process erases all material already on the disk, so if you're formatting a used disk, make sure it doesn't contain any programs you want to save. See item 7, below, on reading the disk directory.

2. As a beginner, you should start entering short Basic programs. Avoid machine language listings and very lengthy Basic programs until you get the hang of what you're doing. We have a checksum program (Perfect Typist) which actually proofreads your typing and tells you when you make a mistake. You should type in Perfect Typist before you enter any programs. See directions below.

3. Remember to press the return key after each programming line you type in.

4. As you are typing in a program, you are likely to make typographical errors. To check what you have typed in, you'll need to list your program's lines on the screen. You can specify the exact lines that you want to see. Typing LIST 10–50 will list lines 10 through 50. LIST 20 will list only line 20. If you see an error in one of your listed lines, you can fix it by using the INST/DEL key and retyping the incorrect section of the line. Always press the return key after you have fixed a line.

5. Be sure to save what you have typed in before turning off your computer. To save any partial or complete Basic program listing to your disk, type:

```
SAVE "NAME",8 <Press Return>
```

C-128 owners can press F5, type in the program name, and press the return key.

Note: As you save subsequent versions of the same program, you need to make a slight change in the program name each time. You might simply add version numbers to the end of the program name (PROGRAM.1, PROGRAM.2, etc.).

6. While working on a program, you may develop several versions before you're satisfied that you have it in final form. After you *do* achieve that final version, you might want to go back and erase the old, incomplete versions from your disk. Erasing unwanted programs is called scratching. (Be sure not to erase your final version!) To scratch a program, type:

```
OPEN15,8,15 <Press Return>
PRINT#15,"S0:prog.name" <Press Return and wait a few seconds>
CLOSE15 <Press Return>
```

7. After you have saved several programs to your disk, you will need to see their names so that you can load the one you want. To get the complete list (the disk directory) of all the program names on your disk, type:

```
LOAD "$",8 <Press Return>
```

Then type LIST to actually see the directory. C-128 owners simply press F3.

8. When you know what program you want to load into your computer, type:

```
LOAD "NAME",8 <Press Return>
```

C-128 owners can just press F2, type in the program name, and press the return key.

9. After you have loaded a program, type RUN to actually use the program.

# How to Type Listings from *RUN*

To simplify your typing of *RUN*'s C-64 and C-128 program listings, we include checksum numbers. These numbers follow a REM statement at the end of each line (e.g., :REM*123). These checksum numbers necessitate your using *RUN*'s Perfect Typist programs, listed below. Use 64 Perfect Typist for C-64 programs and 128 Perfect Typist for 128 Mode programs on the C-128.

Type in 64 Perfect Typist (Listing 1) or 128 Perfect Typist (Listing 2) and save it to either tape or disk before running. When you want to type in a 64- or a 128-mode program, first load and run the appropriate Perfect Typist listing. Two SYS numbers will be displayed on your screen. Jot these down and keep them handy. They are the SYS numbers that you type in for deactivating and reactivating the checksum program.

After Perfect Typist has been loaded and run, start typing in the program listing from *RUN* as you normally do. The only difference is that now, after you press the return key to log in each line, a 1-, 2- or 3-digit number will appear below the line on the left margin. This is the checksum number, ranging from 0 to 255.

If this number matches the checksum number printed in the listing after the :REM*, then you know you have typed that line correctly. Then you type the next program line right over the previous line's checksum value. If the checksum numbers do not agree, analyze your line on screen for any typographic errors or omissions. Make the needed changes and press the return key again to log in those changes. A new checksum number will appear in place of the old one. Compare this to the magazine's number and then proceed to the next line.

When you've finished typing in your program, disable the Perfect Typist by typing in the appropriate SYS number for either 64 or 128 mode, and press the return key. Now you can save your program as usual, to disk or tape. (Before you attempt to run your new program, turn your computer off and back on to completely clear out the Perfect Typist program.)

You may save an incomplete program any time and continue it later. You will have to reload and run the Perfect Typist program, then load the incompleted pro-

gram that you were working on, list it, and continue where you left off.

The 128 Perfect Typist will work in either 40 or 80 columns. Also, it lets you use the C-128's automatic line-numbering. If Auto is on, the checksum will be printed below the line you just entered, and the C-128 will place the next line number below the checksum.

All listings in *RUN* have been translated so that the graphics and control characters are designated as understandable key combinations. When you see instructions inside curly brackets, such as {SHIFT L}, you should hold down the shift key and press the L key. What you see on your screen will look quite different from what is designated inside the brackets. Another example is {22 SPACEs}, which instructs you to press the space bar 22 times.

## Listing 1. *64 Perfect Typist program.*

```
1 REM 64 PERFECT TYPIST
2 REM
3 REM WRITTEN BY:
4 REM JAMES E. BORDEN
5 REM 641 ADAMS ROAD
6 REM CARLISLE, PA 17013
7 REM
10 POKE56,PEEK(56)-1:POKE52,PEEK(56):CLR
20 PG=PEEK(56):ML=PG*256+60
30 FORX=ML TO ML+154:READD:T=T+D:POKEX,D:NE
   XT
40 IFT<>16251 THEN PRINT"ERROR IN DATA...":
   END
60 POKEML+4,PG:POKE ML+10,PG:POKE ML+16,PG
70 POKE ML+20,PG:POKE ML+32,PG:POKE ML+38,P
   G
80 POKE ML+141,PG
89 PRINT"{SHFT CLR}{CRSR RT}**************
   ************************"
90 SYS ML:PRINT "{CRSR RT}** 64 PERFECT TYP
   IST IS NOW ACTIVE{2 SPACEs}**"
100 PRINT "{CRSR RT}** SYS"ML"=ON{5 SPACEs}
    SYS"ML+30"=OFF **"
101 PRINT"{CRSR RT}**********************
    **************":NEW
110 DATA 173,005,003,201,003,208,001,096
120 DATA 141,105,003,173,004,003,141,104
130 DATA 003,162,103,160,003,142,004,003
140 DATA 140,005,003,096,234,234,173,104
150 DATA 003,141,004,003,173,105,003,141
160 DATA 005,003,096,032,124,165,132,011
170 DATA 162,000,142,240,003,142,241,003
180 DATA 189,000,002,240,051,201,032,208
190 DATA 004,164,212,240,040,201,034,208
200 DATA 008,072,165,212,073,001,133,212
210 DATA 104,072,238,241,003,173,241,003
220 DATA 041,007,168,104,024,072,024,104
230 DATA 016,001,056,042,136,016,246,109
240 DATA 240,003,141,240,003,232,208,200
250 DATA 173,240,003,024,101,020,024,101
260 DATA 021,141,240,003,169,042,032,210
270 DATA 255,169,000,174,240,003,032,205
280 DATA 189,162,003,189,211,003,032,210
290 DATA 255,202,016,247,164,011,096,145
300 DATA 013,032,032
```

## Listing 2. *128 Perfect Typist program.*

```
1 REM 40/80 COL 128 MODE PERFECT TYPIST
2 REM
3 REM WRITTEN BY:
4 REM JAMES E. BORDEN
5 REM 641 ADAMS ROAD
6 REM CARLISLE, PA 17013
7 REM
10 FORX=5120TO5379:READD:T=T+D:POKEX,D:NEXT

20 IFT<>28312 THENPRINT"{2 CRSR DNs}ERROR I
   N DATA...":END
25 A$="":IFPEEK(215)=128THENA$="{20 SPACEs}
   "
30 PRINT"{SHFT CLR}"A$"{CRSR RT}**********
   **************************"
40 PRINTA$"{CRSR RT}** 128 PERFECT TYPIST I
   S NOW ACTIVE **"
50 PRINTA$"{CRSR RT}**{2 SPACEs}SYS 5120=ON
   {7 SPACEs}SYS 5150=OFF{2 SPACEs}**"
60 PRINTA$"{CRSR RT}**********************
   ***************":SYS5120:NEW
5120 DATA 173,005,003,201,020,208,001,096,1
     41,045
5130 DATA 020,173,004,003,141,044,020,162,0
     43,160
5140 DATA 020,142,004,003,140,005,003,096,2
     34,234
5150 DATA 173,044,020,141,004,003,173,045,0
     20,141
5160 DATA 005,003,096,032,013,067,140,255,0
     19,162
5170 DATA 000,142,252,019,142,253,019,142,2
     54,019
5180 DATA 189,000,002,201,032,240,008,201,0
     48,144
5190 DATA 007,201,058,176,003,232,208,238,1
     89,000
5200 DATA 002,240,054,201,032,208,005,172,2
     54,019
5210 DATA 240,042,201,034,208,010,072,173,2
     54,019
5220 DATA 073,001,141,254,019,104,072,238,2
     53,019
5230 DATA 173,253,019,041,007,168,104,024,0
     72,024
5240 DATA 104,016,001,056,042,136,016,246,1
     09,252
5250 DATA 019,141,252,019,232,208,197,173,2
     52,019
5260 DATA 024,101,022,024,101,023,141,252,0
     19,169
5270 DATA 042,032,241,020,032,188,020,160,0
     02,185
5280 DATA 185,020,032,241,020,136,016,247,1
     65,116
5290 DATA 208,009,165,117,208,005,169,145,0
     32,241
5300 DATA 020,172,255,019,096,013,032,032,1
     62,000
5310 DATA 173,252,019,232,056,233,100,176,2
     50,105
5320 DATA 100,202,240,003,032,232,020,201,0
     10,176
5330 DATA 005,205,252,019,240,015,162,000,2
     32,056
5340 DATA 233,010,016,250,024,105,010,202,0
     32,232
5350 DATA 020,170,072,138,009,048,032,241,0
     20,104
5360 DATA 096,170,173,000,255,072,169,000,1
     41,000
5370 DATA 255,138,032,210,255,104,141,000,2
     55,096
```

# List of Advertisers


| Reader Service | | Page |
|---|---|---|
| 8 | Abacus Software | 59, 61 |
| 260 | Acorn of India | 84 |
| 7 | Aprotek | 93, 86 |
| 182 | Basement Boys Software | 44 |
| 134 | Berkeley Softworks | 6, 7 |
| 16 | Bodylog, Inc. | CII, 1 |
| 181 | CAPP Co Products | 107 |
| 193 | Cardinal Software | 107 |
| 81 | Central Point Software | 24 |
| 32 | Chipmunk Software | 105 |
| * | C.O.M.B. | 53, 43 |
| 64 | Compuserve | 19 |
| * | Computer Centers of America | 75 |
| 274 | Computer Friends | 38 |
| 70 | Computer Mart | 101 |
| * | Covox, Inc. | 99 |
| * | Crown Custom Covers | 81 |
| 157 | D.B. Software | 36 |
| 80 | Digital Solutions | CIV |
| 156 | Emerald Components Inc. | 99 |
| 104 | Firebird Software | 23, 29 |
| 107 | Firstline Software | 39 |
| 144 | Free Spirit Software | 81 |
| * | GE Information Services | 83 |
| 9 | H&E Computronics | CIII |
| 72 | H&P Computers | 63 |
| 67 | Illustrated Images | 45 |
| * | Intelligent I/O | 84 |
| 202 | Jason-Ranheim | 54 |
| 145 | KFS Software | 101 |
| * | Lyco Computer | 26, 27 |
| 119 | Marathon Software | 74 |
| 189 | Megasoft Ltd. | 55 |
| 68 | Microprose Software | 49 |
| 47 | Microcomputer Games | 11 |
| 207 | Micro Computer Services | 89 |
| 172 | Micro W.D.I. | 101 |
| 10 | Mindscape | 2, 3 |
| 60 | Omnitronix | 100 |
| 223 | Pro-Tech-Tronics | 65 |
| 74 | Prof Jones | 107 |
| 93 | Professional Software | 21 |
| 15 | Protecto Enterprize | 70, 71, 73 |
| 220 | Quinsept | 94 |
| 215 | RJ Softshop | 94 |
| | RUN | |
| | RUN Subscriptions | 32 |
| | ReRUN Subscriptions | 80 |
| | ReRUN Library | 68 |
| | Moving | 44 |
| | Attention Subscribers | 107 |
| | RUN T-Shirts | 104 |
| | RUN Class Ads | 97 |
| 254 | Software Discounts of America | 69 |
| 137 | Solid State Software | 89 |
| 101 | Stat Soft | 89 |
| 25 | Stategic Simulations | 37 |
| 26 | SubLogic | 57 |
| 122 | Sunrise Software | 95 |
| 75 | TC Electronics | 89 |
| 155 | Tenex Computer Express | 79 |
| * | Time Life Books | 17 |
| 2 | Timeworks, Inc. | 25 |
| 209 | Tussey Computer Products | 14, 15 |
| 80 | VG Data Shack | 9 |
| 121 | Value Soft | 42 |
| 205 | Video File | 95 |
| 97 | White House Computers | 85 |
| 96 | Xetec, Inc. | 24 |


For further information from our advertisers, circle the corresponding Reader Service number on the Reader Service card.

*This advertiser prefers to be contacted directly.


Advertising Sales:
**Steve Robbins; Ken Blakeman;**
**Nancy Potter**
**(603)-924-7138 or (800)-441-4403;**

West Coast Sales Office:
**Giorgio Saluti**
**(415)-328-3470 or (800)-227-8365**
**In Calif.: (800)-344-4636**

RUN
**T-Shirts**

- 100% Cotton, Short-sleeved Shirts
- White with Colorful RUN Logo & Design

**Sizes:** S, M, L, XL **Price:** $9.95 each

Complete coupon, send cash, check, or money order payable to **RUN Magazine.** Allow 6–8 weeks for delivery.

NAME

ADDRESS

CITY STATE ZIP

QUANTITY SIZES

AMOUNT ENCLOSED

**Mail to:** RUN Special Products
80 Pine Street • Peterborough, NH 03458


*October*

## Coming Attractions

*RUN* magazine will really get down to business next month as we take a look at how C-64 and C-128 computers can be used for business purposes. The lineup will include:

- **Survey of CAD Software**—This article will survey some of the computer-aided-design programs on the market to help you decide if your business can benefit from CAD.
- **Type-in Balance Sheet**—C-64 and C-128 owners can use this program to keep accurate, up-to-date financial records for their small business or organization.
- **Software Reviews**—Find out what's available commercially to help you with your business needs.
- **Applications**—Read about how Commodore computers are effectively being used in business every day.

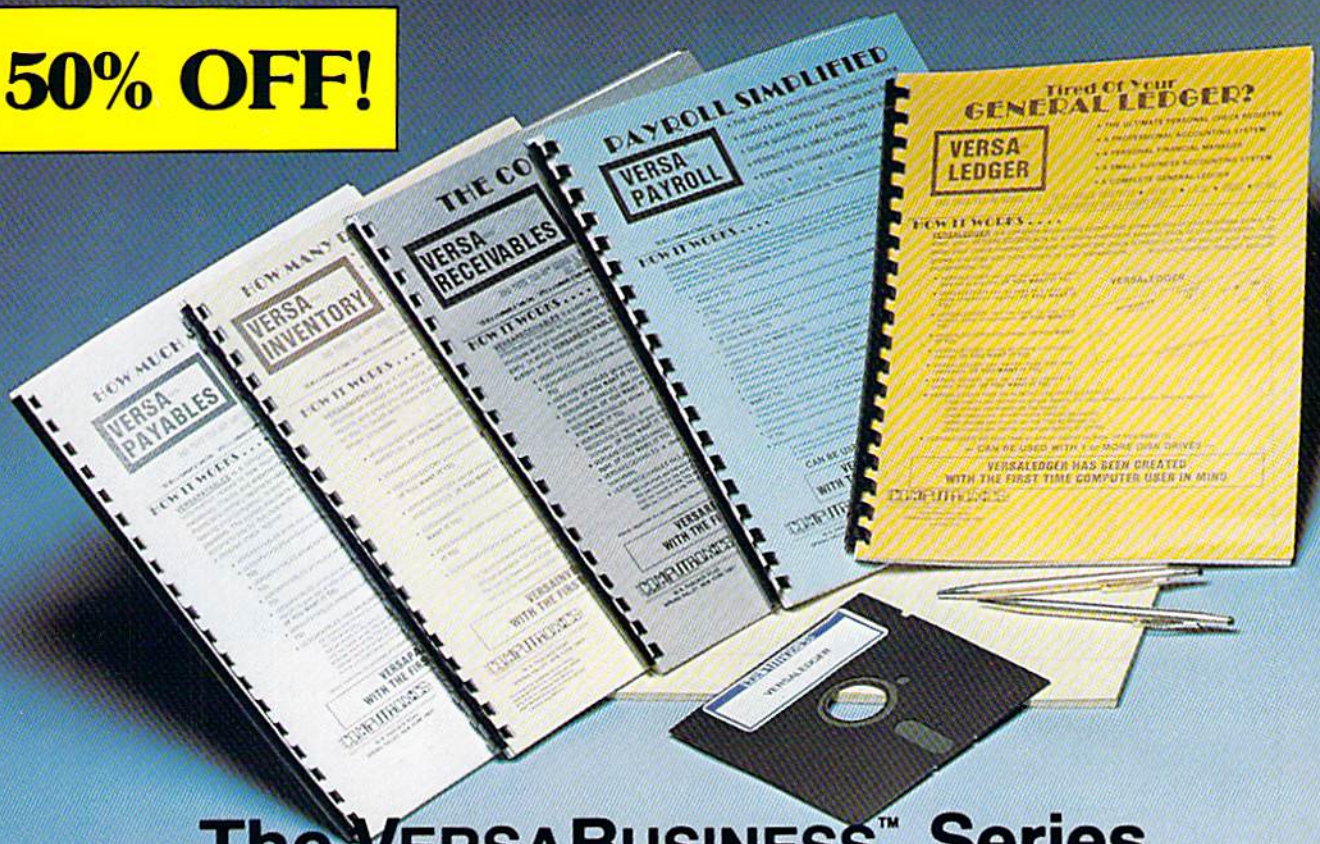
Plus, some non-business features:

- **Jim Butterfield Interview**—A profile of the guru of Commodore computing, who has devoted years to learning, and teaching others, about Commodore computers.
- **Introducing Big Magic**—We're expanding *RUN*'s most-read column to include longer—yet still easy-to-type-in—program listings to help you get the most out of your computer system.

# Introducing the Most Powerful Business Software Ever!

**FOR YOUR IBM • APPLE • MAC • TRS-80 • KAYPRO • COMMODORE • MSDOS OR CP/M COMPUTER***

**50% OFF!**




## The VERSABUSINESS™ Series

Each VERSABUSINESS module can be purchased and used independently, or can be linked in any combination to form a complete, coordinated business system.

### VERSARECEIVABLES™ $99.95

VERSARECEIVABLES™ is a complete menu-driven accounts receivable, invoicing, and monthly statement-generating system. It keeps track of all information related to who owes you or your company money, and can provide automatic billing for past due accounts. VERSARECEIVABLES™ prints all necessary statements, invoices, and summary reports and can be linked with VERSALEDGER II™ and VERSAINVENTORY™.

### VERSAPAYABLES™ $99.95

VERSAPAYABLES™ is designed to keep track of current and aged payables, keeping you in touch with all information regarding how much money your company owes, and to whom. VERSAPAYABLES™ maintains a complete record on each vendor, prints checks, check registers, vouchers, transaction reports, aged payables reports, vendor reports, and more. With VERSAPAYABLES™, you can even let your computer automatically select which vouchers are to be paid.

### VERSAPAYROLL™ $99.95

VERSAPAYROLL™ is a powerful and sophisticated, but easy to use payroll system that keeps track of all government-required payroll information. Complete employee records are maintained, and all necessary payroll calculations are performed automatically, with totals displayed on screen for operator approval. A payroll can be run totally, automatically, or the operator can intervene to prevent a check from being printed, or to alter information on it. If desired, totals may be posted to the VERSALEDGER II™ system.

### VERSAINVENTORY™ $99.95

VERSAINVENTORY™ is a complete inventory control system that gives you instant access to data on any item. VERSAINVENTORY™ keeps track of all information related to what items are in stock, out of stock, on backorder, etc., stores sales and pricing data, alerts you when an item falls below a preset reorder point, and allows you to enter and print invoices directly or to link with the VERSARECEIVABLES™ system. VERSAINVENTORY™ prints all needed inventory listings, reports of items below reorder point, inventory value reports, period and year-to-date sales reports, price lists, inventory checklists, etc.

### VERSALEDGER II™ $149.95

VERSALEDGER II™ is a complete accounting system that grows as your business grows. VERSALEDGER II™ can be used as a simple personal checkbook register, expanded to a small business bookkeeping system or developed into a large corporate general ledger system **without any additional software.**

- VERSALEDGER II™ gives you almost unlimited storage capacity (300 to 10,000 entries per month, depending on the system),
- stores all check and general ledger information forever,
- prints tractor-feed checks,
- handles multiple checkbooks and general ledgers,
- prints 17 customized accounting reports including check registers, balance sheets, income statements, transaction reports, account listings, etc.

VERSALEDGER II™ comes with a professionally-written 160 page manual designed for first-time users. The VERSALEDGER II™ manual will help you become quickly familiar with VERSALEDGER II™, using complete sample data files supplied on diskette and more than 50 pages of sample printouts.

## FOR COMMODORE OWNERS ONLY!

Commodore owners *only* may now take 50% off our listed price of any module(s) from our VersaBusiness Series. All sales are final (our normal 30-day money back guarantee does not apply to sale items).

**To Order:**
**Write or call Toll-free (800) 431-2818**
**(N.Y.S. residents call 914-425-1535)**

- add $3 for shipping in UPS areas
- add $4 for C.O.D. or non-UPS areas
- add $5 to CANADA or MEXICO
- add proper postage elsewhere

**DEALER INQUIRIES WELCOME**

All prices and specifications subject to change / Delivery subject to availability.

## COMPUTRONICS INC

50 N. PASCACK ROAD, SPRING VALLEY, N.Y. 10977

Circle 9 on Reader Service card.

Circle 80 on Reader Service card.

# Solutions!

PW 128/64 Dictionary also available at $14.95 (U.S.)

MAIL ORDERS
**CRYSTAL COMPUTER INC.**
In Michigan 1-517-224-7667
Outside Michigan 1-800-245-7316

CANADIAN DEALER ENQUIRIES
**INGRAM CANADA LTD.**
1-416-738-1700

## Only The Name Is New

The professional, full-featured software line from Digital Solutions is now called Pocket Software.
Pocket Writer 128/64.
Pocket Filer 128/64.
Pocket Planner 128/64.
The names are new, but this super software is still the same.

From now on, when you hear the word Pocket, it means software that's full-featured, handy and easy to use.

Pocket Software at prices that won't pick your pocket.

## Best-selling software for Your Commodore 128 or 64

You want the very best software you can find for your Commodore 128 or 64, right?

You want integrated software — word processing, database and spreadsheet applications — at a sensible price. But, you also want top-of-the-line features. Well, our Pocket 128/64 software goes one better.

With Pocket 128 or 64, you'll find all the features you can imagine . . . and then some. And Pocket 128/64 is so easy to use, you won't even need the reference guide. On-screen and in memory instructions will have you up and running in less than 30 minutes, even if you've never used a computer before.

The price? It's as low as you'd expect for a line of software called 'Pocket'. Suggested Retail Price for the 64 software is $39.95 (U.S.) and $49.95 (U.S.) for the 128. Any of the 64 products may be upgraded to their 128 version for $15.00 (U.S.) + $3.00 shipping and handling. (Available to registered owners from Digital Solutions Inc. only.)

Pocket Writer 128 or 64, Pocket Planner 128 or 64 and Pocket Filer 128 or 64 . . . **Solutions** at sensible prices from Digital Solutions Inc.

International & Distributor enquiries to:

**Serious software that's simple to use.**

**Digital Solutions Inc.**

30 Wertheim Court, Unit 2
Richmond Hill, Ontario
Canada L4B 1B9
telephone (416) 731-8775

*Pocket Writer 128 and 64 are now available in French.*